

Dialogue Journals in Content Classrooms:  
an Interdisciplinary Approach to Improving  
Language, Learning, and Thinking

by

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Submitted to the Faculty of Graduate Studies  
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for the Degree of

MASTER OF EDUCATION

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LANGUAGE, LEARNING, AND THINKING

BY

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## ABSTRACT

This action research / field study focused on investigating whether or not the integration of dialogue journals into content classrooms would be an effective strategy to improve students' attitudes and abilities in the areas of writing, learning, and higher-level thinking. It was based on the concepts of writing across the curriculum, writing to learn, and dialogue as the heart of learning. Eight students were selected for this study, from middle years Science and Social Studies classes in a rural school in Manitoba. After six to eight weeks of written interactions between students and teachers in a natural classroom setting, 88% of the treatment group displayed growth in almost all areas measured. Results indicated that students showed substantial growth in writing, particularly test writing; responded to teacher prompts at a much higher level of thinking; improved grades on higher-level, long-answer test questions; and interacted with the content being studied on a more personal level. Students also displayed more confidence in themselves as writers, learners, and thinkers as a result of this study. Data collected led to the conclusion that integrating dialogue journal writing into content classrooms should facilitate growth in writing, learning, and thinking for most students from grade four onward, over a relatively short period of time.

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# CHAPTER 1

## INTRODUCTION

### RATIONALE

The major purpose of this study is to investigate whether the use of "dialogue journals" in middle-grade content-area classrooms could be an effective strategy to improve students' ability to express themselves in writing, to increase students' ability to retain content area knowledge, and to develop students' ability to engage in higher-order thinking. This study incorporates the concepts of 'writing-across-the-curriculum' and 'writing-to-learn', with an emphasis on dialogue journal writing as a vehicle to promote thinking and learning in content area classrooms.

### Writing-Across-the-Curriculum / Writing-to-Learn

The phenomenon known as Writing-Across-the-Curriculum, or WAC, is one which is based on a philosophy of using writing as a means of expression and/or learning in all areas of the curriculum. "It is difficult to briefly describe a movement that recognizes writing as a key learning process across an unlimited scope of disciplines, but generally writing across the curriculum accepts writing, the need to develop it, and its role in learning as a human function essential to thinking and communicating. The movement contends that to develop writing only in writing or language courses is to deny the writer grist for his or her mill" (Sensenbaugh, 1989, p.462).

Although the WAC movement only really gathered momentum during the

past two decades, the underlying philosophical base on which it is built stretches back many centuries. We need to look to the classical and renaissance periods for an historical explanation, as well as a defence, of programs which involve writing-in-and-across-the-disciplines (Ruszkiewicz, 1982). Ruszkiewicz traced the WAC movement through the centuries. As early as the fourth century BC, he tells us, classical rhetoric played a crucial role in the execution of both the legal and the political professions; during the Christian middle ages, handbooks and guides on how to write sermons, poems, and letters proliferated, showing the practical needs for a literary basis for the daily execution of duties; and during the Renaissance period, eloquence became viewed as a noble entity which could be separated from any one discipline, yet prove essential to all disciplines. A moral dimension was assigned to rhetoric and eloquence, which cut across every discipline and purpose - scholars began to feel that the arts and sciences could not be separated; they should rather inform and nourish one another (Ruszkiewicz, 1982).

The idea of using journals to promote learning and thinking can also be traced back through the ages. Autrey (1987) suggests that the commonplace book of the classical period, a repository of ideas, observations, quotations, or maxims for the speaker or writer to recall for future use, was really the forerunner of today's interdisciplinary journal. Also prominent in the seventeenth century, he contends, was the private chronicle used to assert individuality (this type of journal was actually evident as early as the fifth century, BC). These journals assisted teacher-rhetoricians to develop truth - "a private vision that must constantly be consulted in writing" (Autrey, 1987, p.3). The

renaissance period, Autrey reminds us, saw a resurgence of personal diary writing, and this genre continued to proliferate through the seventeenth, eighteenth, and nineteenth centuries. In 1935, Bronson Alcott became noted for his experiments with journal writing in the classroom (Jackson, 1986). He found that encouraging original thought and the students' own choice of topics in their journals resulted in much more significant growth than learning the rules of rhetoric would ever do. By 1894, journal keeping began to be advocated for aspiring writers, but references in textbooks to diaries, journals, or logs were few and far between right through until the middle of the twentieth century (Jackson, 1986).

Throughout the past century, the popularity of WAC ebbed and waned as one reform movement after another swept across academia (Russel, 1990). But, although cross-curricular writing instruction appears to have been accepted in principle for centuries, it often failed to become a permanent practice in many institutions for two main reasons: it ran counter to the fundamental principle of compartmentalizing knowledge, and it challenged the widely accepted assumption that writing is a "single, generalizable skill, learned ...outside a disciplinary matrix ...and not related in any discipline-specific way to the professional roles associated with a discipline" (Russel, 1990).

According to Russel (1990), however, the current WAC movement has gained a great deal of acceptance in many fields because it responds to three profound shifts: composition studies have undergone a great deal of research into rhetoric in the disciplines, as well as a study of the relationship between language and learning; faculty members are finally coming together to discuss the writing process, as well as other reforms

which bode well for the future of WAC, such as student-centered learning, critical thinking, and higher-order thinking skills; and finally, "the industrial society which gave birth to composition instruction a century ago ...is evolving, ...into a post-industrial society, where new knowledge is created through interdisciplinary collaboration, where competitive advantages come through more effective communication, often written, among workers in all levels and roles, and where new management structures replace the rigid hierarchies of the past. Writing instruction may be part of this shift, as it was part of the shift a century ago" (Russel, 1990, p.68). Maimon (1982) also contends that "...the [WAC] movement reinforced and extended the paradigm shift in composition teaching ...toward an emphasis on the writing process and toward the understanding of writing as a mode of learning" (p.68 & 69). Writing as a process of learning received practical reinforcement and programs could be developed based on a coherent and consistent pedagogical theory; "Instructors who had never assigned a draft or a journal before could be assured that students could help each other by reading and commenting on each other's work" (Maimon, 1982, p.70).

As we are reminded by Jenkinson (1988) "The search for ways to improve the writing of students began centuries ago and will never end" (p.713). There have always been teachers who realized that concentration on the writing process, along with plenty of encouragement, were important for students to be successful as writers. These teachers naturally and instinctively used writing to help students learn, and they met with great successes. But Jenkinson also warns us that "Writing across the curriculum and writing to learn could disappear from the nation's

classrooms within a decade. They could fall victim to unsupportable claims, to zealots who maintain that there is only one way to approach writing or one process to follow, to programs that do not provide adequate training for teachers and administrators, or to statewide testing programs that lead teachers away from writing as discovery and toward writing to impress readers of instant themes" (Jenkinson, 1988, p.717).

In my opinion, WAC and writing-to-learn are viable concepts which must continue to be promoted. Current educational journals often contain articles written by classroom teachers who propose the philosophy of writing-in-and-across-the-disciplines to help students learn to interpret, to fully comprehend, and to remember content materials. Sensenbaugh (1989) states that two hundred twelve documents dealing directly with WAC have been entered into the ERIC database during the period from January 1976 to June 1988 alone; even more documents were entered into related fields. Most of these documents offer practical information to help set up and support programs throughout an educational institution. Many of these authors offer conclusions such as this one by Cudd and Roberts (1989) "Writing facilitates understanding and retention of materials and introduces students to some of the organizational structures authors use to convey information" (p.403), or this one by Wollman-Bonilla (1989) "Journal writing also helped the children grow in communicating and refining their ideas" (p.119). When teachers consistently read statements such as these in their favorite journals, they soon begin to "buy into" the process being described and to try it for themselves. With the increasing number of articles of this type, one can only assume that the philosophy of WAC is alive and well and will continue to proliferate.

As the WAC movement gains momentum, educational institutions are being reaffirmed as communities of readers and writers, and students are being provided with opportunities to practice making connections between writing and learning - "It is in this sense that the future of [WAC] is the only future for composition" (Maimon, 1982, p.70). To maintain success, Maimon suggests, students, instructors, and administration must all be prepared to entertain fundamental changes in how they think and behave and to abandon the potentially disastrous quarrel between process and product; writing-to-learn and learning to write must be viewed as complementary goals. Another important component for success will involve establishing strong connections within English departments and guiding students in a variety of disciplines to learn about connections between rhetoric and substance in their field. Elementary and secondary schools, Maimon suggests, must also continue to make writing an integrated and inevitable part of every day; in-service opportunities for practising teachers should continue to reinforce this, as well as teacher-education programs which mandate courses in the teaching of writing for all future teachers. "The future of [WAC] ideally involves a rediscovery of the fundamental connections at all levels of education - ...writing is inextricably bound up with learning in the arts and sciences" (Maimon, 1982, p.72).

Another profound implication for the future of WAC programs lies in the need to prepare students to enter a job market which will undoubtedly involve information processing, probably with a computer. "Computer literacy will mean much more than mechanical or clerical skill - [it] will increasingly depend on rhetorical skill" (Russel, 1990, p.69). Students,



Russel reminds us, must know how to read and interpret the information available to them, as well as how to communicate in writing, both within and outside of an organizational unit.

Glatthorn (1983) contends that for educational innovations such as WAC programs to really take fire, we may need to change our schools into centers of inquiry where students and teachers work cooperatively to solve problems; we may need to rethink our own priorities. It seems obvious therefore, that the key to the future of WAC programs may lie in the success of establishing a partnership between all aspects of the educational team. Writing-to-learn is an important aspect of total literacy, and Barbara Bush (1989), the first lady of the United States concurs that "the [literacy] problem has many underlying causes and complicating factors. That means the solution must be a multi-front battle waged in the schools, in the streets, in the workplace, and in the home" (p.10 & 11). It seems to me that a cross-curricular approach such as writing-to-learn should help to promote total literacy.

Fulwiler (1990) states that we must overcome the inertia that keeps instructors teaching the same courses in the same way year after year, while resisting faculty development programs and the implementation of new ideas and methodologies. But we are reminded by Tchudi (1986), "When we invite colleagues in other disciplines and fields to teach writing, we are in fact calling for nothing less than a revolution in most of education. For despite all the evidence gathered in this century that learning is experiential, that it requires learners to make connections for themselves, a majority of school and college teaching still follows the old deductive pattern of instructors presenting concepts and having

students show mastery of them" (Tchudi, 1986, p.22). According to Tchudi, colleagues in content areas may need to revolutionize their teaching style because WAC does not appear to work well in content classes that are taught deductively. But English teachers will also need to model the same kind of attitude toward changes by approaching topics through a focus on content and taking an increasingly interdisciplinary perspective in their own teaching methodologies (Tchudi, 1986).

The WAC movement today does seem to be maturing and to be displaying tremendous staying power. It is dependent upon our willingness to change and to get even better at what we do; it goes deep into the heart of the whole academic enterprise. More and more teachers are finding that when their teaching is more engaging, it is more exciting, and it actually becomes easier and more rewarding. Their leadership and enthusiasm is slowly filtering outwards and upwards; the future of WAC looks promising.

With innovations and change happening so rapidly at this time, looking at the future of WAC forces a great deal of speculation, but its promise of greater learning and understanding for students makes one optimistic about its potential to continue to gather momentum and grow over the next few decades.

#### Integration Promotes Language, Learning, and Thinking

The literature reviewed suggests that the idea of integrating language arts instruction into content classrooms has been strongly advocated since the 1930's (Walden, 1969) and recent studies indicate that this idea continues to be promoted throughout the academic community (Bullock, 1975; Macleod & Shirley, 1988; Tighe & Koziol, 1982). Since the

teaching techniques employed in content classrooms are very heavily based on language activities (Goodman et al, 1987; Smith, Stanley & Shores, 1957) and interactive social processes (Langer, 1987; Moffet & Wagner, 1983), and since analytic thinking and formal reasoning are dependent upon the acquisition of literacy skills (Wells, 1981), a 'guided' writing focus in the content classroom is becoming more strongly advocated as a means of empowering students to make sense of the events that shape their world (Gere, 1985; Greenberg & Rath, 1985; Vacca & Vacca, 1986).

Integrating language arts across the curriculum should facilitate the development of more complex language arts skills as children are led by skilful teachers to stretch their language to the limit (Goodman, Smith, Meredith & Goodman, 1987). Providing opportunities for dialogue in content classes allows children to expand their power to use language (Ediger, 1975; Goodman et al, 1987; Vygotsky, 1978) and to build communication competence within specific situations (Thaiss & Suhor, 1982).

Instruction in writing skills involves employing a scaffolding effect (Flower & Hayes, 1981; Kirby & Liner, 1988) with direct instruction being provided in components of the writing process, along with opportunities to use the strategies taught in meaningful situations (Fitzgerald & Teasley, 1986; Rosenshine, 1987). Lessons taught in English classes will not be fully internalized unless they are repeated and re-emphasized in content classes (Fulwiler & Young, 1982; Gere, 1985; Vacca & Vacca, 1986). Applebee (1984) strongly advocates that teachers need to change their focus, moving towards teaching writing as a means of learning rather than just teaching writing to express learning.

Integrating the teaching of language arts skills into content classrooms should facilitate the organization and interpretation of content and enable students to translate sophisticated ideas into meaningful language (Bullock, 1975). Facts in isolation do not constitute knowledge; knowledge must be created through linking past experiences with new ones (Dewey, 1932; Long & Bulgarella, 1985). Providing a variety of learning experiences within each discipline facilitates individual differences (Breiter, 1975; Vygotsky, 1978) but children seem to maximize learning when they are actively engaged in activities which involve language and content skilfully interwoven (MacLure, Phillips, & Wilkinson, 1988; Smith, 1986; Tough, 1979). The teaching/learning process, therefore, should focus on inquiry rather than telling (Calder & Antan, 1970) with the teacher ensuring language arts skills instruction (Cunningham & Cunningham, 1987; Lange, 1983; Moore & Readence, 1981; Storey, 1982) and adequate provision of time to develop the skills (Berliner, 1981) while interacting with and internalizing the content (Parker & Goodkin, 1987).

Studies have shown that writing-across-the-curriculum programs result in dramatic improvements in general abilities and attitudes of students (Ingmanson & Basile, 1986). For content-and-writing-rich courses to be truly successful however, writing must be seen as a way of learning not just a means of reflecting something already learned (Fleming, 1984), with teachers focusing their responses on major areas of development - challenging, guiding, suggesting, and questioning the content, presentation, and style of writing, rather than focusing on surface areas, grammar, and mechanics (Applebee, 1984; Fleming, 1984). Students must

learn how to use disciplines to solve problems and to understand phenomena; they must become comfortable with the language of the disciplines since "knowing" involves the interrelationship between experiences and language (Goodman et al, 1987).

By using language in content classrooms to help internalize ideas and concepts, it seems logical to assume that students should find themselves achieving much higher levels of thinking ability. Language is the main vehicle for teaching thinking and reasoning (Goodman et al, 1987; Searle, 1984; Vygotsky, 1962), and teachers can encourage students to stretch their thinking by employing open-ended questioning techniques (Goodman et al, 1987) and making effective use of collaborative talk in content classrooms (MacLure, Phillips & Wilkinson, 1988; Walden, 1969). When teachers become facilitators of learning and stimulate inquiry, students can often achieve far beyond expectations (Kitagawa, 1982; Searle, 1984). "This approach features the building of independent investigative skills; the emphasis is on learning how to learn - on process rather than on content" (McClusky and Walker, 1986, p.108).

Vygotsky (1987) states that, since the function systems of adults are shaped by prior experiences as a child, teachers helping to increase the ability of children to control and direct their own behaviour and learning should result in increased abilities of adults to manipulate and affect their own existence. And, since language serves as a means of thinking - a manifestation of thought, it is, therefore, important to provide children with a wide range of language experiences to facilitate the development of a variety of kinds of thinking in students (Parker & Goodkin, 1987).

When reading and writing strategies are employed together, students are afforded the opportunity to think more critically and to achieve multiple perspectives and a more evaluative stance (Tierney & Others, 1989). Employing writing-to-learn strategies in content classrooms enables students to make a smooth transition from a personal knowledge base into the world of historical concepts (Kelder, 1987), as well as to shape their thinking while directing their own learning (McGinley & Tierney, 1988). Greene (1978) suggests that once students can pose questions relevant to their lives, they will seek consciously and critically for relevant meanings that promote true understanding and sense-making. Students must learn to analyze, synthesize, and apply their knowledge to a variety of situations, to share ideas, to formulate arguments, and to discuss issues; integrating language arts instruction into content classrooms should help to facilitate the development of these critical thinking skills (Wilson, 1988).

McLeod (1989) suggests that "...we need, as we move towards WAC as a permanent fixture in higher education, to define our terms carefully for our administrative colleagues, so that they understand that the term does not mean a program that is merely additive - more term papers, more courses, more proficiency tests - but one that is closely tied with thinking and learning, one that will bring about changes in teaching as well as in student writing. We also need to establish quite clearly that WAC programs certainly do not exclude examinations or more coursework in writing as a means of establishing proficiency, but that WAC is not to be identified solely with writing proficiency" (p.342-343).

### Dialogue Journals - A Practical Strategy

Many teachers are beginning to see that writing in the content areas should not be an unwelcome add-on or a burden on the teacher; it should be an integral part of every subject (Hightshue et al, 1988). The type of writing assigned, however, is very important for success; teachers need to have at their disposal a variety of examples of different types of writing to accomplish different purposes. They can then sort out the purposes for their teaching and connect writing to each of them (Gray, 1988).

Journal writing has proven to be an effective thinking/learning tool for students of all ages. Students are provided with opportunities to set direction and to make judgements without risk of censure or correction, to experiment with language and writing style, to rehearse thoughts, to explore issues, and to establish their own position without being influenced by others (Fulwiler, 1985; Gere, 1985; Wollman-Bonilla, 1989). With journals, every student's experience is valid - creating a learning climate which frees the student to contribute to self-worth (Gere, 1985). Furthermore, response journals are tailored to each child's individual needs and interests and they are powerful tools for assessing the abilities and attitudes of students, in order to plan elaborate, individualized assignments designed to meet those needs (Fulwiler, 1985; Wollman-Bonilla, 1989).

The concept of student response journals emphasizes inquiry (Kroft, 1986), promotes critical thinking (Hillocks, 1986; Kroft, 1986), and assists students in personalizing their knowledge (Wasson-Ellam, 1987) in a wide variety of subject areas. This interdisciplinary journal writing promotes longer-lasting understanding of a new concept, improved writing

skills (Golub, 1986; Jenkinson, 1988), a deeper understanding of the concepts being presented, and general academic/cognitive growth and improvement (Buttery & Allan, 1981; Fulwiler & Young, 1982). Students experience opportunities to reflect, to discover, to create, to articulate (Nugent & Nugent, 1987) as well as to bring order and organization to the learning process (Fulwiler & Young, 1982; Voss, 1988).

Since children learn and develop higher-level thinking and depth of appreciation and understanding through dialogue, and since individualized oral dialogue is so difficult to sustain effectively in a classroom, dialogue journals can serve as an effective means of increasing the amount of dialogue taking place in a classroom, therefore also increasing the amount of learning taking place as well (Shuy, 1987). This study attempted to verify the claims of other researchers, and to show that dialogue journals can be used effectively to increase students' ability to express themselves in writing, to retain content, and to engage in higher-order thinking.

Flanigan (1989) asserts that WAC proponents need to support their claims with more empirical evidence that WAC does, indeed, promote learning. "Research is essential, if we are to convince others and if we are to have a long-range impact on teaching and learning in the university. Obviously writing, along with other activities that contribute to literacy, needs to be studied in a variety of contexts within schools and universities. ...Research on the effects of writing in other disciplines ...will prove more useful than all the present enthusiasm" (Flanigan, 1989, p.6). Hamilton-Wieler (1987) suggests that those interested in developing WAC programs will be provided with a much



greater chance of success if they take these things into consideration: an understanding of the relationship between language and learning is essential; the language tasks provided should be for the purpose of enabling students to work competently within the discipline-specific discourse; collaboration among colleagues should be the basis for the program; all modes of the language arts, in a wide range of registers, should be integrated into the program; and writing tasks should go beyond demonstrating knowledge to extending knowledge. That is precisely what this thesis proposed to do - it was based on researching the effects of using writing-to-learn in other disciplines. The central idea embodied the concept of the interrelationship between writing and learning. It focused on a specific task which would enable students to write more competently within a discipline-specific discourse. Inherent in the research study was the concept of collaboration among teachers regarding the effectiveness of their responses for initiating and promoting writing tasks which go beyond demonstrating knowledge to extending and internalizing that knowledge, as well as to applying it in meaningful situations.

## STATEMENT OF THE PROBLEM

The purpose of this study was to investigate whether dialogue-journal writing would prove to be an effective teaching/learning strategy in middle-years content area classrooms. The study attempted to answer the following questions:

Would the use of dialogue journals in middle grade content area classrooms be an effective strategy to:

- a) improve students' ability to express themselves in writing?
- b) increase students' ability to retain content area knowledge?
- c) develop students' ability to engage in higher-order thinking?

### Hypotheses

This school-based field investigation attempted to substantiate the following hypotheses:

a) As a result of this focus on journal writing which encouraged freedom of expression, uninhibited by "right answers", students were expected to develop a more positive attitude about themselves as writers, and to feel more comfortable and self-assured when asked to write responses to be graded by the teacher.

b) With the provision of teacher responses which acknowledged and praised strengths and encouraged experimentation, it seemed logical to assume that the student's own written product would show improvement over time.

c) Similarly, practice, coupled with increased confidence in the ability to express content knowledge in written form should have helped students to achieve higher grades through improvement in the long-answer responses that are often required on content area tests during the middle years.

d) As a result of the student-directed interaction with the content being studied, an expected outcome was for students to retain content more readily than with more traditional methods of teacher-directed focus.

e) Teacher responses which provided individual attention, and encouraged students to stretch their thinking within the discipline being studied, should have helped to facilitate improvement in student written responses to higher-level thinking questions.

f) At the conclusion of a unit of study which focused on dialogue journals as a strategy for writing-to-learn in content areas, it was expected that both students and teachers would recognize this strategy as an effective method of facilitating growth in both writing and thinking.

## SIGNIFICANCE OF THE STUDY

Teachers today are being asked to do more than ever before. Not only should they be teaching all the required curricula, they must ensure that all students: master basic competencies; develop problem-solving and critical-thinking skills; acquire general knowledge about a wide range of subjects; prepare themselves for a variety of possible choices in the future; develop computer literacy and communication skills at a very high level; learn to collaborate with others effectively; understand the impact of the media on our global community; learn to discriminate and question materials being studied; acquire abilities to access, interpret, and respond to more information than we can even imagine being available to us at one time; learn to handle stress; develop appropriate social skills among a world filled with violence; appreciate and participate in a wide range of leisure activities... and much, much more. Coupled with these expectations we find problems encountered with mainstreaming, shrinking

budgets which prohibit the purchase of necessary resources and supports, and ever-increasing pupil-teacher ratios. Attempting to meet individual needs for all students becomes more and more impossible as time goes by.

It is my contention that a strategy that will enable a teacher to help students develop writing skills, content retention abilities, and higher-level thinking skills all at one time would be invaluable. With time being at a premium in the classroom, teachers are always looking for ways to work smarter rather than to work harder and this may be one of those ways.

In many instances, rural schools often face an additional problem of student numbers which do not warrant single-grade classrooms. Multi-graded situations further complicate the task of trying to provide instruction at the appropriate level for each individual student, as the teacher is scrambling to keep up with the additional pressures created by being responsible for so many curricula. Dialogue journal writing promises to help address that problem in a manageable way in multi-grade situations.

Since dialogue has proven to be a good teaching/learning strategy, Shuy (1987) examined a way to increase the amount of dialogue taking place in a classroom. He presented the main problems - time, permission to be noisy, and depth of dialogue possible if everyone must be given a turn to speak - and suggested that these problems could all be overcome through journal writing. He argues that since written conversation is interactive, functional, and self-generated, students need to be naturally engaged with the teacher in an atmosphere of mutual trust, enabling both parties to express their opinions, explain their feelings, and offer their

arguments. Shuy is very convincing in his presentation regarding the use of dialogue journals as being congruent with the theoretical stance of dialogue as the heart of learning, and argues that it is imperative for classrooms to supplement oral dialogue with written dialogue on a regular basis.

This strategy may be particularly helpful to teachers who have students in their classes who they know are not working to their fullest potential. Finding ways to stimulate and inspire students is not always easy. Most students, however, tend to respond well to individual attention given to them by a competent teacher. Dialogue journals provide a vehicle for doing just that, without interfering with classmates, or taking inordinate amounts of class time which may be needed for dealing with others.

Atwell (1990) found that learning logs were especially useful in her classes to help third-, fourth-, and fifth-grade special education students make some sense out of their learning, through immersion in language. "They need to write, not only because our society demands literacy as a survival skill but also to help them think better" (p.77). "These writing activities," she continues, "capture and focus my students' attention so that they can begin to process information efficiently and take a giant step toward solving their own problems as learners" (p.78).

But one of the biggest challenges for teachers still lies in trying to effectively teach students who are unmotivated to learn or, worse yet, discipline problems who also make learning impossible for others in the class. McClusky and Walker (1986) tell us that motivation and discipline often go hand in hand, since most of the students who tend to be

disruptive in class are either unable to do the work assigned or are bored and unchallenged. It is my contention that interaction with others in activities which promote language development, creative instructional methodologies, and relevance, important aspects of an integrated dialogue journal writing program, help to alleviate both of these problems while stimulating children to the ultimate of their thinking and learning potential.

Although it may be of little value to compare today's standards with those of the past, Bullock (1975) suggests, it is safe to say that most language specialists will agree that "standards of writing, speaking, and reading can and should be raised" (p.7). He contends that "secondary schools should adopt a language policy across the curriculum. Many teachers lack an adequate understanding of the complexities of language development, and they often hold the English teacher responsible for language performance in contexts outside his control" (p.8). Bullock endeavors to "convince the teacher of history or of science, for example, that he has to understand the process by which his pupils take possession of the historical or scientific information that is offered them; and that such an understanding involves his paying particular attention to the part language plays in learning" (p.188). He further proposes that the benefits of adopting a language-across-the-curriculum policy would strongly outweigh the considerable efforts it would demand.

I feel that it would be unfortunate indeed if the focus on language-across-the-curriculum and writing-to-learn was put on hold until students reach the secondary schools. My experiences over the past thirty years as an educator have shown that this focus does happen regularly and

naturally in many primary teachers' classrooms. However, it is unfortunate that, just when the students begin to need this integration the most, the focus suddenly shifts to a more teacher-directed, departmentalized approach during the middle years, in far too many classrooms. The "middle-years" is the area chosen for the focus of this study because I feel that much of the literature seems to deal with secondary and post-secondary institutions. I agree that the focus there, on integration, is absolutely necessary, but it may be too little, too late, if middle-years students are not taught to use this strategy and to become comfortable with it as they strive to gain independence as learners.

Atwell (1990) seems to affirm this feeling when she suggests that the fourth grade is a year when teachers begin to expect many new and more grown-up things from their students - real homework assignments are given; independent study becomes part of the daily routine; content-area study becomes broader and more concentrated; students begin to delve deeper into curricular areas; a more academic approach is stressed, which includes specialized vocabulary, critical thinking, daily discussions, and higher-level questions; an emphasis is placed on remembering facts and concepts and relating them in a logical manner; and references are expected for report writing as it becomes a more scholarly process. Atwell (1990) sums up this transition by saying, "this is the year when we begin to make big intellectual demands of children and expect them to become serious students. The learning log is a unique method for collecting and identifying material that can help upper elementary learners focus on, compare, and classify information" (p.53). "Grade four is a year of many changes, and logs can play a positive role in helping students grow"

(p.60). Finally, she states that "learning logs are great sources of information in all grades for any subject, but I am especially convinced of their usefulness in the upper elementary grades" (p.60).

I believe that language arts skills must be part of the knowledge considered most important for students to learn; the thinking skills that accompany language arts teaching help to establish order and facilitate learning. The Manitoba Language Arts Curriculum Guide (1982) states that reading and listening skills are vital to the acquisition of knowledge; they enable the learner to enlarge, enrich, and give meaning to his/her experiences. Writing and speaking skills are the main vehicles for the expression and internalization of knowledge; they enable learners to communicate with others, to develop personality, to release creativity, to express individual needs, and to convince others of their viewpoints in order to effect positive changes (Language Arts Curriculum Guide, 1982).

I view education as a cyclical model - not an end in itself, but rather a means to an end - further education. To be truly educated, I feel that students must do more than acquire a large repertoire of knowledge; they must be able to use that knowledge in meaningful ways, and to express themselves clearly to others; they must be able to skilfully and creatively integrate their language arts skills with their knowledge base.

As one wave after another of educational change sweeps over the academic community, and as teachers are asked to accept one philosophy after another, they tend to become sceptics, and rightfully so. One of the first comments they often make when confronted with a new methodology centers around the idea of "show me". This is an attempt to provide some



evidence that the strategy being studied is effective for accomplishing the growth predicted. It is hoped that teachers will then be encouraged to delve more deeply into the area of writing-to-learn; I feel that this will be beneficial to many students. With the current focus in the schools centering around problem-solving, critical-thinking, and providing gifted instruction within the confines of the classroom, as opposed to a pull-out model, dialogue journal writing seems to hold a great deal of promise as a means of enabling a skilful teacher to fulfil these additional expectations efficiently and effectively.

Teachers may need to be reminded that many of the educational waves that have swept over us in the past two or three decades have often failed badly because they have been misinterpreted or they did not have a strong enough experiential base. Integration is not just another wave to ride - it is a sound educational practice that is receiving more and more attention every year. The concept is based on solid principles of making learning individual, meaningful, relevant, and providing plenty of purposeful practice to develop competence in skills that are essential for success in our culture. As more and more expectations are imposed upon the schools in the future, we must find some way to make better use of time and to be accountable for a high level of literacy and oracy in all of our graduates. More integration just might be the answer.

Once teachers see how much the students can benefit from this interdisciplinary dialogue journal approach, and how the teachers' load will ultimately become less burdensome and more rewarding, I believe that more teachers will be willing to take a risk and try this approach with their students. Only then will they be fully convinced that this simple,

but effective methodology is one that truly makes sense, and only then will they be prepared to effect the necessary changes in their approach to teaching. Those who are open to change deserve to be applauded!

Change is a complex and somewhat painful process. It is time-consuming and fraught with many pitfalls. It is not black and white, with clearly delineated boundaries. Educators who strive for meaningful change should be applauded, encouraged, and supported. They must regularly examine their practices and reflect upon their effectiveness in achieving worthwhile goals for students and themselves so that the change is not given mere lip-service, but becomes a vehicle for the transformation of the individual as a person and as a professional (Courtland et al, 1987, p.317).

## SCOPE AND LIMITATIONS

This study was designed to convince teachers and students that employing the proposed strategy can be extremely beneficial in their content classrooms. Its focus was to investigate and assess the implementation of a particular strategy used with certain students within a specific classroom situation. The scope of the conclusions drawn, and their applicability within a variety of situations, have been limited by a number of factors:

a) The subjective nature of the assessment of writing samples made the results less reliable than 'hard data';

b) Thinking is extremely difficult to assess, and the analytic marking scales being used allowed for individual interpretations;

c) Only two subjects per grade level were assessed, so it would be impossible to make sweeping generalizations from the data collected;

d) The treatment was only being employed for six-eight weeks, and that is not enough for a longitudinal study; this became, therefore, a series of case studies. It would have been beneficial to continue this type of strategy for a couple of years, tracking the same students and assessing results over time.

e) Assessment of 'learning' was based on one set of test data only - other factors probably influenced these results, eg. the length of time the student studied for each test, the physical condition of the student, tiredness, student interest in the content of the unit, or the level of difficulty of test questions;

f) This project was implemented in only one unit of study per grade level; the generalization of results to other units will be difficult.

g) The fact that students and teachers were enthusiastic about this opportunity to be actively involved as researchers, and made every effort to be cooperative and to do their best to make this project "work" may have resulted in the creation of a "halo effect". Although there is every indication that all subjects were honest in their comments and responses, it is entirely possible that they were focusing more on the positives than they were on the negatives throughout this study.

Despite these limitations, results of the assessments, together with student and teacher responses to the survey questions at the end of the study do give some indication about the effectiveness of this strategy as a methodology for teaching and learning in middle years classrooms.

## DEFINITION OF TERMS

For the purpose of this study, the following definitions will be employed:

1. 'Language Arts' - will refer to the four strands of learning presented in the Manitoba English Language Arts Curriculum Guide (1982) - speaking and listening as skills for oracy, and reading and writing as skills for literacy. Walden (1969) defines Language Arts in a simplistic manner; "Reading is the interpretation of writing, just as listening (or better, understanding) is the interpretation of speech" (p.43), and Moffett and Wagner (1983) add "...thinking inevitably grounds all four language activities and hence must be considered part of language arts" (p.13).

2. 'Integration' - is explained very simply in the Manitoba Language Arts Curriculum Guide (1982) as subjects taught together. It states "...integration is the aim of this guide; it is near the end point of an idealistic continuum" - their continuum begins with segmentation (subjects taught separately) and runs through to integration (subjects taught together) (p.3).

3. 'Content area classrooms' - refer to those classrooms where teachers specialize in programs of studies which focus on learning a prescribed content within a particular discipline, such as history, geography, science, mathematics, or computer.

4. 'WAC' - is an acronym for Writing-Across-the-Curriculum. It refers to the recognition of "writing as a key learning process across an unlimited scope of disciplines" (Sensenbaugh, 1989, p.462).

5. 'Writing-to-Learn' - involves providing writing tasks which go beyond demonstrating knowledge to extending, internalizing, and applying that knowledge.

6. 'Higher-level(order) Thinking' - refers to the ability of students to comfortably deal with two areas:

a) the upper two levels of Bloom's taxonomy of higher-order thinking skills - comprehension, application, analysis, synthesis, and evaluation (Paul, 1985);

b) critical thinking, which Ennis (1985) tells us is "reflective and reasonable thinking that is focused on deciding what to believe or do" (p.45). For the purposes of planning and discussion, Ennis (1985) has broken critical thinking up into two categories:

i) dispositions, which include such things as being open-minded, considering the total situation, assessing reasons, and attempting to be well-informed;

ii) abilities, which can be classified as clarity -related, inference-related, abilities which help establish a sound basis for inference, and abilities involved in decision making or problem solving.

According to Tierney and Others (1989) critical thinking also "involves the ongoing judgement of one's own thinking" (p.136).

7. 'Middle years classrooms' - refers to grades 4 to 8 (junior high students are included in this terminology).

8. 'Dialogue journals' - refer to response journals in which students carry on a dialogue with the teacher. Students comment on, question, or react to material being presented in class, and then teachers

respond to the journal entries. Students then respond to the teacher responses, and so on - effectively carrying out a written dialogue with each other about the subject being studied.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

The purpose of this study was to investigate whether the use of dialogue journals in middle grade content area classrooms could be an effective strategy to improve students' ability to express themselves in writing, to increase students' ability to retain content area knowledge, and to develop students' ability to engage in higher-order thinking. This chapter consists of five sections, and will attempt to review the literature that focuses on: the rationale to support the integration of language-across-the-curriculum; writing-across-the-curriculum to improve language and learning; the integration of language arts to improve concept formation and the retention of knowledge in content classrooms; the integration of language arts to facilitate thinking; and journal writing as a practical strategy for integrating writing-to-learn into content classrooms.

#### LANGUAGE ACROSS THE CURRICULUM

To accept the idea of an interdisciplinary approach to the teaching of language arts, it is necessary to decide whose responsibility it is to teach language arts and what advantages the students might experience through an interdisciplinary approach. This first section of the review will focus on literature which attempts to establish a rationale for

integrating language arts instruction into content area disciplines.

I would like to suggest that the concept of integrating language arts instruction into content area classrooms is not a new one, but that proponents of the language-across-the-curriculum movement continue to proliferate. As early as the 1930's, Walden (1969) has pointed out, experts in the field of language arts have been advocating that all teachers should be teachers of reading. He tells us that the National Committee on Reading, in its 1937 report, "divided the responsibility for reading instruction among teachers of reading, teachers of content, and librarians, [and] ...described the responsibilities that teachers of content subjects should assume toward reading instruction" (p.x).

Integration of language arts teaching into content area classrooms can be looked at through the eyes of Harold Newman (1979) who says that we should not confine the teaching of language arts skills to English classes, but rather teach them in functional ways, permeating all curricular areas. Newman studied the prevailing practices used by many elementary school teachers to teach Language Arts. After studying language arts guides and processes from Kindergarten right through junior high, in both language arts classes and content area classes such as science and social studies, he came to the conclusion that language is primarily a tool for expression and communication and that we should help children use language rather than teaching it as an isolated subject. Newman further concluded that speaking, listening, reading, and writing all utilize similar language conventions, affect experience, and require similar thinking skills. He argued that they all require perception and evaluation of relationships, and they all furnish a base upon which



cognitive learning can be built and enlarged. All appear to be mutually reinforcing and, when taught in an integrated manner, they result in greater language power and stimulate the student to develop greater thinking power (Newman, 1979).

Several other researchers agree that there is an underlying interdependence between language and learning; content teaching is based on language activities, and language arts is a curriculum which cannot be taught effectively in isolation, but must be integrated with other curricular areas. Smith, Stanley, and Shores (1957) studied various theories of curriculum development and produced a critical analysis of the fundamental principles underlying these theories. They also studied programs and practices being implemented in classrooms as tools for the practical application of these basic theoretical principles. Looking at the allotment and distribution of instructional time, they found that the quality of writing in content areas is often over-looked as if it were only important in language arts classes. They contend that it is important for all teachers to focus on good writing skills and instill pride in the finished product: "...The objectives to be reached through the study of English rank high in the scale of importance, and much time is needed for its mastery" (p.197). Discussing the chief characteristics of subject area curricula, Smith, Stanley, and Shores also remind us that "...teaching procedures and techniques in content classes are largely based upon language activities - lectures (listening/presenting), discussions, questions and answers, written exercises, oral reports, term papers, and the like" (p.233). It is my contention therefore, that items such as these should be included in content curricula in detail, complete

with teaching strategies, and evaluation checklists. Teachers should never assume that all the language skills necessary for success in their particular discipline have been mastered by all students.

Having reviewed a great deal of literature, and having studied many students in actual learning situations, Moffett and Wagner (1983) discussed how individualized instruction, social interaction with others, and integration of the language arts across the curriculum affect the learning and thinking abilities of students. Their studies have led them to conclude that language arts "is the one place where all forms and contents can be learned in relation to each other... In this broader sense, language arts might indeed act as a service course to other courses. It is at this level that goals encompass all media, subject areas, language arts, and other arts to create a common ground for an interdisciplinary curriculum" (p.21). Moffett and Wagner (1983) maintain that for years teachers have been trying to change the students to fit the needs of the required curricula - perhaps it is now time to look at changing the curricula to meet the needs of the students. They suggest that teachers need "...to envision what the language arts ought to be like. This is the first step towards getting institutions to conform to their mission, instead of the mission conforming to the institutions" (p.21). Children come to us with language, which gives meaning to their experiences and permits expression of thought. These are important concepts in all subjects and need to continue to be emphasized and developed (Moffett & Wagner, 1983).

Ragan and Shepherd (1971) have also taken a close look at language arts as a subject and how the information required in language arts

curricula can best be transmitted to students. Their feelings are similar to those of Moffett and Wagner (1983). Ragan and Shepherd tell us that "...the curriculum area of language arts consists of the skills and goals of communicating, and their application to bodies of content. To study only the language arts would be to study only skills and tools outside their functioning environment. Language arts is a dependent curriculum area, one which must be supplemented by other areas for meaningfulness" (p.231-232). Taking into account the findings of these researchers who have studied the teaching of language arts in various classrooms, as well as the language arts curricula being implemented by teachers at all levels of the school system, there appears to be extensive support for my contention that language arts must be integrated into content classrooms, and teachers who are not willing to do this will not be meeting what should be one of their primary objectives - providing optimum learning conditions for their students.

Attempting to synthesize modern views of language, literature, and thinking that are pertinent to education, Goodman, Smith, Meredith and Goodman (1987) focus on the nature of language and thinking and lend support to child-centered, open enquiry, and whole language education. They have explored relationships among language, thinking, and education, drawing heavily on the literature of both historical and contemporary colleagues. Goodman et al advocate developing "language through learning and learning through language" (p.6) and teaching knowledge, attitudes, and competencies about language and thinking across all subject and disciplinary areas. Content area classrooms, they contend, provide an excellent forum for providing the students with 'real' problems to solve,

while the teacher monitors the language and thinking the pupils use to solve the problem. "Language development is best served when it is fully integrated in the curriculum. And language is central to the curriculum, not isolated for instruction, or dissected for analysis" (Goodman et al, 1987, p.57). Since "reading in particular content fields often requires pupils to develop special strategies for dealing with the style and content of the field" (p.263), they suggest that whole language teachers should utilize every opportunity to integrate reading and writing into the total day's curriculum.

When it comes to the area of developing competencies in language arts, Goodman, Smith, Meredith and Goodman (1987) certainly suggest that every opportunity for natural conversation must be exploited; by providing time for children to talk about new concepts and ideas they encounter in all subject areas, they will ultimately acquire the skills to communicate what they have learned to others. To expand their level of language competency, children must be provided with opportunities to stretch their language to the limits - "...as communication needs occur that they cannot meet, they will reach for more language; they will be self-motivated to expand their language" (Goodman et al, 1987). They further state that children need to be nurtured so they will feel pride in their language competency, and that whole language activities enable children to extend their language and thinking in functional contexts through relevant language usage. Goodman et al strongly support the idea of integrating language into content classes to improve language abilities when they state that "all teachers need to become guides, supports, and monitors of learning ...and expand their [the students'] power to use language and to

think" (p.404).

Bullock's (1975) committee of inquiry into the state of affairs in the area of Language Arts seems to agree. Bullock suggests that, since children learn about language by experiencing it and experimenting with its use, it is important to create situations which encourage children to use more elaborate language forms to extend the complexity of the present level of language. Bullock emphasizes that the facilitation and development of both oral and written language fluency will have great value for learning throughout the curriculum. Language skills, he proposes, are crucial to help facilitate reading, learning, thinking, and social and emotional development.

Individual components of the language arts curriculum each have an important place in the learning process and taken collectively, these components combine to form a powerful base upon which learning and thinking can be developed. Oracy skills are vital for the proper and efficient development of literacy. We are told by Vygotsky (1978) that a child internalizes social language and makes it personal, and through this process he/she learns. Since exposure through lectures does not allow for adult guidance or for collaboration with peers, Vygotsky emphasizes the importance of dialogue and the various roles that language plays in instruction.

This concept of integration to develop language proficiency is also supported by Ediger (1975) who suggests that teachers should provide opportunities for learners to engage in speaking activities in all curricular areas. She provides her readers with a number of learning activities that can be done with the students to help them have a variety

of experiences which will enable them to use oracy as an aide for studying content. Ediger found that oral language experiences assist in achieving relevant objectives of all curricular areas, and the most productive environment for learners to develop their communication skills was not a formal class setting, but "...a stimulating environment conducive to guiding learners to desire to communicate ideas effectively" (p.420) - the type of setting often found in content classes.

Summarizing the works of linguists who have conducted studies of completely oral cultures, Ong (1982) was able to make several generalizations about orality and use them to help us develop a better understanding of literacy. He states that human communication demands anticipated feedback (oral or written), that reflectiveness and articulateness take time to grow, and that, since a tremendous store of knowledge has been made available to us through literacy, children need a great deal of purposeful practice to learn to deal with the vocabulary and language forms used to express this knowledge in so many disciplinary forms. Ong's arguments, therefore, lend further support to the supposition that content and language arts teachers must work together to accomplish this language development effectively.

This strong oral base serves as a springboard for literacy development. Thaiss and Suhor (1982) refer to research which has shown that writing should have an oral base, students should often write without assignments and assume ownership of the text, and writing skills and process should be taught in context, not in isolation. Children, they claim, learn to build communication competence through analyzing whether their language is appropriate or inappropriate to the context, depending

upon their effectiveness in achieving the writer's or speaker's purpose within specific situations. Thaiss and Suhor concur that integration of language arts into content classes will provide richer and more varied language experiences, focus attention on language arts processes, and provide more time for actually using the skills learned, in all subject areas.

Fulwiler and Young (1982) agree that: "In schools where the lessons taught in English classes are not repeated and emphasized in the student's other classes, the knowledge and skills learned in those lessons tend to atrophy. We believe language skills deserve more conscious attention from teachers in all academic disciplines, and that teachers who recognize the role played by these "elementary" skills can help students increase their learning ability, improve their communication skills, and enhance their cognitive and emotional growth" (p.ix). Writing-to-learn, they claim, is not for communication; it is to "objectify" our perceptions of reality - expressive writing enables students to get in touch with themselves, whereas informative writing merely connects them to others. Fulwiler and Young advocate an interaction between these two functions. "If we teachers, at all levels and in all disciplines will use language to promote learning as well as informing, if we will approach writing as a complex developmental process, and if we will encourage students to travel extensively in the universe of discourse, then we can become both enablers and ennoblers, and we can help students discover the power of language" (p.12).

Frank Smith (1986) reports on his examination of prepackaged instructional materials being used with millions of students each year.

He contends that these programs present meaningless tasks and standardized testing with the expectation that worthwhile learning will occur. Smith concludes that "reading and writing are basic to every academic activity in school, not only as subjects to be taught, but as the means of engaging in learning and of demonstrating learning" (p.10). He claims that there is no conclusive research evidence that programmatic instructional packages have ever been successful in teaching children anything worthwhile. Children, he contends, are the most conspicuous victims of drill and test programs because these programs do not reflect the way children learn reading, writing, language, or anything worthwhile, and they deny children opportunities to learn and to see any sense in what they are supposed to be learning. "Children in schools today," Smith claims, "will only read and write if they are required to do so, and then reluctantly." (p.15). I believe that the skilful integration of language arts instruction into content classrooms could provide the purposeful situations necessary to change students' attitudes towards reading and writing.

Most of my colleagues would strongly agree that there is never enough time in the day to provide ample opportunities for students to effectively master all the skills they must acquire to develop language arts proficiency. Berliner (1981) studied time allocations in reading and language arts activities, and found a great deal of variation in the amount of time spent in reading and reading-related activities throughout the day in each classroom. Generally he found that there was a direct correlation between the amount of time spent on reading in the classrooms and the achievement level of the students on reading tests. It should



logically follow, therefore, that teaching reading/language skills across the curriculum would certainly increase achievement level through increasing time on task.

When dealing with reading in the History class, Taylor (1989) suggests that students must be taught such things as how to read and analyze historical sources and to interpret the author's intent and distinguish it from his motives. It is important, he says, for students to understand linguistic nuances and reach a stage of critical judgement to permit reading with discrimination. He implies that this type of 'reading with higher-order thinking' can best be taught in content classes - "if ...students learn (and write) better in courses based upon this shift of emphasis towards what writers do with language, that in itself should be sufficient justification for applying these insights in the classroom" (Taylor, 1989, p.373).

There seems to be little doubt about the total interdependence between language and thinking. Neither of these can be fully developed in a vacuum and there is strong evidence to suggest that, since literacy is based upon thinking and reasoning, the development of higher levels of language skills should lead to higher levels of thinking as well. Langer (1987) suggests that literacy includes the ability to think and to reason as well as the use of language to extend meanings and knowledge about ideas and experiences - it is a way of thinking and communicating. She reminds us that, since children learn these higher-level literacy skills through interactive social processes, it is important to involve students as active learners in all subject areas. Langer refers to several studies which indicate that we often teach students to read and write, but not to

become literate thinkers. She agrees with Newman (1979) and with Smith, Stanley and Shores (1957) when she says that children learn best when they are directly involved in meaningful social activities, and that direct instruction in skills is often necessary, but it should be done in purposeful situations, not in isolation.

A series of articles focusing on linguistic development in children have been compiled by Wells (1981) who definitely supports the idea that "The acquisition of literacy ...provides a tool for, and the spur to, higher levels of analytic thinking and formal reasoning" (p.245). For this cognitive development to result, however, a much higher level of literacy is required, and this is only likely to result from moving beyond familiar material to unfamiliar material and attempting to organize and reorganize that material to meet the demands of particular problems and tasks. This symbolic manipulation of experience through language should "permeate a much greater part of an individual's daily activities" (Wells, 1981, p.255). When the acquisition of literacy skills receives strong emphasis and an independent, inquiring, and critical attitude is encouraged in all subject areas, children's improved ability to engage in higher-level cognitive activities will quickly become obvious. "Much that we are taught we fail to learn and much that we learn is learned without teaching" (Wells, 1981, p.268) through skilful application of language arts skills in both formal and informal settings. It seems to me that it would not be possible for students to reach their fullest potential if instruction in the language arts was relegated only to English classrooms; too many opportunities would be missed.

## Summary

There is definitely enough support among the literature reviewed to make a good case for the integration of language arts across the curriculum to promote language, learning, and thinking. The literature presented suggests that both language arts teachers and content teachers need to work together to integrate language arts instruction into content area classrooms. It advocates: that language arts competencies provide a base for cognitive learning and empower students; that content disciplines often require special language arts strategies which can best be taught in real rather than contrived situations; that students become involved as active learners; that students be given opportunities to use language rather than learning it in isolation; that the focus should be on the processes of 'doing language arts'; that each individual language arts component is important for learning; that students need to experience the opportunities and the motivation to stretch and extend language; that language and learning are totally interdependent; and that a focus on improving language arts skills in all subject disciplines should improve language, learning, and thinking.

It is my contention, therefore, that integrating language arts across the curriculum should facilitate the development of more complex language arts skills. We are told that children increase their mastery of language through using it in meaningful ways (Newman, 1979) and that higher mental functions are socially formed and culturally transmitted, through language (Vygotsky, 1978). To effectively develop the learners' language skills, therefore, I would suggest that instruction must extend beyond the confines of the language arts classrooms.

I will now shift the focus to writing, the language arts component that is featured in this study, and investigate the premise that integrating writing-across-the-curriculum will improve students' writing competencies, increase understanding of and retention of content information, and lead students to develop more sophisticated levels of thinking.

## WRITING ACROSS THE CURRICULUM

Since the strategy being investigated in this study has a writing-to-learn focus, this section of the literature review will focus on the concept of integrating writing-across-the-curriculum as a means of promoting language, learning, and thinking. Proponents of writing-across-the-curriculum (WAC) have also been active since the 1930's, with attempts to "restructure the curriculum radically ...with team-taught interdisciplinary courses..." (Russel, 1990,p.60). Presenting various changes in the underlying philosophy of university writing perspectives over the past century, Russel (1990) illustrates how the concept of WAC continues to resurface again and again in the universities, only to be beaten back each time by logistics such as faculty specialization, research pressures, and a lack of homogeneity among the student body. He hypothesizes that the history of this movement is cyclical and will continue to be so until the universities are prepared to overcome a century of inertia by undergoing deep changes in their language policies.

It seems to me that this movement is certainly very much alive in

the universities today however, and the philosophical changes undergone by many professors, together with the shifting focus towards collaboration, may help to keep it that way. In the fall of 1987, McLeod and Shirley (1988) surveyed colleges and universities throughout both the United States and Canada, and compiled an annotated list of four hundred twenty-seven writing-across-the-curriculum programs which were currently being implemented - most of them on an on-going basis. This definitely suggests continued support for the philosophy of writing-across-the-curriculum.

Based on a perceived need to enhance both the quality and the quantity of writing instruction in secondary schools, Tighe and Koziol (1982) conducted a survey to further our insight into the classroom practices of two hundred sixty-five English, social studies, and science teachers. When asked whose responsibility it was "for the development of students' writing skills, eighty percent of the English teachers, sixty-nine percent of the social studies teachers, and sixty percent of the science teachers agreed that it was a responsibility that should be shared by both English and content area teachers" (p.78). However, Tighe and Koziol's survey also indicated that few of the schools had satisfactory programs, and very few of the teachers surveyed felt competent to develop and coordinate such a program within their schools. It appears therefore, that, although a great deal of work still remains to be done in the area of program planning and implementation, a large percentage of content area teachers are open to the establishment of integrated programs which will enhance the learning for their students by sharing the responsibility for the teaching of language arts.

Having completed extensive study into the teaching of language arts,

Greenberg and Rath (1985) encourage teachers to use reading and writing to empower students to become active agents in their education and in their lives. Even students with limited reading and writing skills need to be helped to learn to value these skills and to view writing, not as a punishment, but rather as an opportunity to clarify their own ideas and perceptions and to convey them to others (Greenberg & Rath, 1985). We are told by Vygotsky (1978) that writing instruction should begin in the preschool years, activities selected must be relevant to life, and writing should be taught naturally - cultivated rather than imposed - similar to speech. Greenberg and Rath (1985) agree - "When students have the chance to write in their own words on topics that are important to them and to test whether their writing can communicate to their peers, writing and reading become powerful tools. With these tools, students can make sense of the surrounding world and, ultimately, have an effect on it" (p.13).

It is suggested by Vacca and Vacca (1986) that research findings over the past decade indicate three reasons for us to take a good look at the role of writing in content classrooms: writing is intimately related to reading; it is a valuable tool for learning; and it improves thinking. They tell us that "Students who participate in a writing to learn program are likely to learn more content, understand it better, and retain it longer" (p.210), and that learning logs are one of the most versatile and productive writing-to-learn strategies, assisting students to reveal problems, clarify thinking, and generate ideas and questions. Vacca and Vacca tell us that inquiry-centered writing helps students to understand and synthesize what is being learned and to identify the present level of knowledge, as well as any gaps that exist in the learning. "Over fifty

percent of the material read or heard in class is often forgotten in a matter of a few minutes. Strategies which trigger recall and overcome forgetting are essential" (Vacca & Vacca, 1986, p.273). Gere (1985) agrees with Vacca and Vacca (1986) that writing-to-learn is learning to think on paper; it is focused writing, helping students to direct their minds to learning the subject matter, to increase complexity of thinking, and to increase writing fluency. What we should really be teaching in content classes is the ability to master processes which enable students to make sense of the events that have shaped their world; the most valuable thing we give students in any subject is the knowledge of how to learn it and the confidence to ultimately perform as they choose (Gere, 1985).

People write for many reasons, and children need to be prepared for a host of different situations that require knowledge of different writing schema. Sanders (1985) conducted an ethnographic study of why people write, and found several implications for writing instruction which directly address the idea of the integration of writing-across-the-curriculum. Sanders tells us that children need a wide range of writing activities, with a variety of audiences; they need authentic writing experiences which emphasize the process over the product; and students must view writing as a natural part of classroom life, not something reserved for English class. Based on a three year study of children's writing by Calkins and Sowers, Graves (1983) concurs that teachers must make writing meaningful and exciting for students. His conferencing approach to teaching writing is based on the philosophy that children learn language by using it in meaningful situations. In Graves' approach,

emphasis is placed on writing as a process and students are taught the skills they are lacking as they need them. I believe that content teachers would do well to buy into this philosophy as one of their teaching methodologies. Children need to be taught to write about each content discipline in a meaningful, process-oriented manner, with emphasis on learning skills as they are required.

It is suggested by Kirby and Liner (1988) that, until the present decade, there has been no theory on which to base writing instruction. There was no set plan to follow; it has been a "hit and miss" type of approach, with too much emphasis on form and not enough time to experiment with writing. Prepackaged writing kits and isolated skills instruction often formed the basis for a writing program. Kirby and Liner agree with Smith (1986) that these methods were not effective, and support the developmental approach to writing being expounded by so many researchers today. They set a tone for teachers which includes experimentation, questioning, and risk-taking, and suggest that writers need to think about, talk about, and write about writing in all disciplines. Skills instruction to improve both process and product should, they claim, be skilfully blended in a scaffolding effect as the individual is ready for it, through conferencing and small group instructional techniques. Students must learn to write from different perspectives, in various disciplines, to discover the power they have when they develop a strong, genuine 'voice' (Kirby & Liner, 1988).

As more researchers have begun to study the various aspects of writing instruction, it becomes more and more obvious that writing is much more than just a series of skills which can be taught in language arts



classes. Writing involves complicated and often not very well-understood processes. A theory of the cognitive processes involved in writing is presented by Flower and Hayes (1981). They maintain that writers orchestrate and organize their compositions using a set of distinctive thinking processes which are hierarchically organized, with component processes embedded within other components. Writing is also guided by a network of goals which may be generated to embody a purpose for writing, or to regenerate goals in light of what they have learned by writing (Flower & Hayes, 1981). Students may need to be taught to understand this process in order to use it to their best advantage in all subject areas.

Fitzgerald, Spiegel and Teasley (1987) investigated the concept of direct instruction in components of the writing process. Having undertaken some research into story writing, they concluded that instruction in story parts positively affected organization as well as enhancing the overall quality of students' writing. In another article, Fitzgerald and Teasley (1986) report on the effect of instruction in narrative structure - results indicated a strong positive effect on organization and quality of compositions and, moreover, this effect was realized quickly and maintained over time. Since these findings indicate that direct instruction in narrative structure or storywriting improves children's written compositions, it seems reasonable to assume that direct instruction in other discourse structures peculiar to specific disciplines, coupled with opportunities to use the writing strategies taught, may also improve children's ability to express themselves more comfortably and skilfully in content subjects.

Although time spent on skills instruction in language arts classes

may be important, the lack of time spent on using language in meaningful ways is a problem cited by many researchers. The most effective teachers, according to Rosenshine (1987), use direct instruction techniques to help students "encode and elaborate the new material so it can later be used for higher level thinking" (p.35). He tells us that this is an effective procedure for teaching a skill, modelling a process, or presenting new content. We are reminded by Stevens, Madden, Slavin and Farnish (1987) however, that the time allocation for language arts instruction in schools is focused primarily on the teaching of isolated skills in mechanics of writing, with little time spent actually practising writing/language arts. This is confirmed by Applebee (1981) who found that "students were spending only three percent of their class time working on essays or other writing of at least paragraph length, and in the national survey thirty-two percent of the teachers said that they never assigned such writing to the students in the class on which they were reporting. Only thirty-one percent reported frequently using such writing tasks" (p.99). Without plenty of meaningful experiences, in all disciplines, how can we expect students to become more proficient in their writing ability?

Applebee (1984) confirms this view that, although students may receive most of their formal writing instruction in English classes, "their experiences in other classes have a powerful influence on their writing skills and their attitudes toward writing" (p.183). Applebee further contends that process-oriented activities are not appropriate in situations where writing is being used for evaluative purposes - typical writing experiences in most high school classrooms. To successfully implement process-oriented writing, teachers must change their focus to

writing-to-learn rather than just writing to express learning; students must have a work-in-progress to which writing processes can be applied. Langer (1986) concurs that "Effective literacy instruction is the kind of communicative activity in which teachers sensitively collaborate in the envisionment-building process - learning to understand what a particular student means to say, and where that student needs help in saying it" (p.142). I feel that more focus therefore, on writing as a means of learning in content classes, would provide the opportunities for students to develop specific skills, more efficiency in the writing process, and more positive attitudes towards effective expression of ideas in content areas.

In a different, but similar vein, Griffin and Cole (1987) tell us that integrating writing instruction into computer classes also works extremely well; providing students with access to a computer for all their writing, in both language arts and content classrooms, should encourage them to greatly improve their written products. They found that patterns of use for enrichment, extra instruction, and drill and practice were much less effective than "orchestrating" the computer into the child's developmental stage and the curriculum sequence of an ordinary school day. Vesper (1983) also conducted an informal survey to determine the pros and cons of using a computer word processor to produce papers. He found that this procedure is highly motivational at both the writing and the editing stages, and extremely valuable at the editing or revising stage. My experience over the past ten years has shown that the word processing component of computer education is probably the most beneficial for teaching both computer skills and writing skills simultaneously.

Motivation to write is high and the ease of editing makes the finished product more likely to be one in which the writer can take great pride. But, as with everything else, for computers to be totally effective as learning tools, I believe the instruction must be integrated with writing instruction and it must be relevant to student needs across the curriculum.

Doing more extensive interdisciplinary writing assists students to explore a subject and discover meaning, as well as to become comfortable in the conventions of specialized disciplines (Applebee, 1981). "Language is used differently in the various academic disciplines: vocabularies are specialized, forms of argument and organization are conventionalized, and the typical modes of discourse vary. ...To fully understand a science, a student must learn to write within the conventions of the discipline - but too frequently it is only in English class ...that we provide the opportunity for students to write much at all" (Applebee, 1981, p.100).

Content classrooms are excellent places for students to acquire skills in various types of writing and to practice these skills, but writing in content classrooms will not improve unless the importance of writing well is promoted and writing skills specific to each discipline are taught and practised (Vacca & Vacca, 1986). Writing helps students to define what they know and what they need to know, and to clarify concepts (Gere, 1985). As students learn self-discipline, open-mindedness, and an ability to find central ideas, they become better readers, writers, and listeners, and they develop confidence in their learning ability - "Not only does their writing improve, but they develop skills which they can use in other areas of their lives" (Gere, 1985, p.210).

## Summary

Based on the literature reviewed in this section, several generalizations about writing competencies can be formulated. Writing proficiency increases through: using writing in a variety of meaningful situations; quality feedback and time to practice; authentic experiences and audiences; an emphasis on process, in natural settings, in all disciplines; direct instruction in writing skills, as they are required; nurturing, and a sense of pride in a quality product; assignments that are purposeful and relevant; and opportunities to practice expressive writing along with informative writing. All of these criteria can be more easily fulfilled within the confines of an interdisciplinary writing program. Promoting writing instruction in content classrooms, therefore, should help students to improve their writing competencies.

Students need to be made aware that language arts skills will be the basis for making use of all the facts available to them with the explosion of the technological revolution (Russel, 1990). It is commonly accepted today among educators that research skills, interpretation skills, critical thinking, argumentation, decision making, and problem solving skills are all vital to a well-educated person. Unfortunately, responsibility for teaching these skills often rests with the language arts teacher, and I maintain that it is impossible to learn all of this within the confines of language arts classrooms. Although content selection is important as the basis for understanding and appreciating culture and making wise decisions, I am certain that process learning will be more useful to students in 'real life' than the mere memorization of facts. Education should not be an end in itself, but rather a process to

improve education. Let us now turn to an investigation into the effects of language arts integration on students' content competencies.

## INTEGRATION OF LANGUAGE ARTS IMPROVES LEARNING

In my experience, content area classrooms have proven to be ideal settings for students to practice their language arts skills and at the same time, to improve content area competencies. Integrating the teaching of language arts skills into content classrooms should do more than increase fluency in both written and spoken language; it should force students to organize and interpret content and translate sophisticated ideas into meaningful language. I feel that these practices should help students to improve retention of content material and to increase their understanding of concepts being presented.

The idea of students in content area classrooms being facilitated through making their learning relevant and enabling the internalization of concepts through language, has been expounded by educators for many years. Dewey (1932) attempted to determine the central ideas implied in a democratic society, as well as the theories of learning and moral development which seemed to stand in the way of realizing the democratic ideal, and to apply these ideas to the aims and methods of public education. His philosophies have become a basis for the thinking of many modern researchers. He contends that "...experience involves a connection of doing or trying with something which is undergone in consequence. A separation of the active doing phase from the passive undergoing phase

destroys the vital meaning of an experience" (p.177). Dewey implies that facts in isolation are not learning - they must be related to everyday experience, and suggests that "normal communication with others is the readiest way of effecting this development [meaningful experiences] for it links up the net results of the experience of the group and even the race with the immediate experience of an individual" (p.255).

This concept of using "normal communication" to help students link up experiences and create knowledge was also investigated by Long and Bulgarella (1985). Looking at a transcript of what a group of three first grade children thought and did as they composed a story together, Long and Bulgarella (1985) found several surprises. The children were actively involved in thinking and exchanging viewpoints, arguments focused on content as often as on mechanics, and the level of ideas in the exchanges was much higher than expected. As a result, Long and Bulgarella (1985) conclude that children must be allowed to use oral language to initiate their own learning and modify ideas they have generated; knowledge is constructed by each individual and promoted by social interaction, and when knowledge is made real, it can be more easily retained.

I think a thorough knowledge of how children learn is crucial for all teachers, and it is vitally important to provide students with a variety of teaching/learning methodologies to ensure optimum learning conditions for all students. Since it is commonly accepted that learning relies very heavily on an oral language base, any opportunities to extend oracy within the classroom should help to facilitate learning. It is my contention that dialogue journal writing is a strategy which could provide the basis for efficiently and effectively extending learning by enabling

the child to carry on an intensive, individualized dialogue with the teacher. Based on Vygotsky's (1978) assertion that the functional learning system of one child may not be identical to another, I would suggest that the habit of providing a variety of individualized language experiences within each discipline, a task that can easily be accomplished using dialogue journals, just might be the key to enabling some students to have the opportunity for success in a content classroom in which they are experiencing difficulties.

Breiter (1975) studied the relative value of reading and listening as techniques of instruction and found no significant differences. She found that, in most schools, children are exposed to an in-depth, sequential program of instruction in reading skills, while very little formal instruction is given in the development of listening skills. Breiter says, "It is common knowledge that some children learn better by one mode than by another, and many prefer or even require exposure to information by more than one approach" (p.131). Success in learning content materials, therefore, can only be enhanced by providing a variety of methods and materials to try to meet all the individual needs of the learners in each classroom (Breiter, 1975). Similarly, McCormick (1981) reports that the recent nation-wide interest in listening programs has led many educators to begin focusing on the development of specific speaking and listening programs within their own school systems. She states that studies have shown that children spend more than fifty percent of their learning time listening, and that children learn much of their language through effective listening, so development of good listening skills is important. However, she says, "...children will not learn to listen



effectively unless they are taught" (p.42). Bone (1979) agrees that listening is an effective learning tool which develops best in meaningful situations, and that content classrooms afford an ideal environment to practice these skills. Both Bone and Gold (1981) have begun to experiment more and more with listening instruction, and their studies suggest that a good listening improvement program will definitely help with the internalization of content by giving students a structural framework for organizing and making sense of what they hear. In my opinion, it is imperative that more than one method of instruction should be used in the classroom so that all children will have adequate exposure to the method they find most suitable; careful, direct instruction in all aspects of the language arts is important to enhance success in content classrooms.

For many students I have found oral discussion to be a key component in the learning process. Before, during, and after learning, dialogue provides an opportunity to talk about the concepts and to personalize them. Smith's (1986) studies point out that people learn in the act of making sense of the world around them - "The moment of comprehension is the moment of learning ...and with spoken language they accomplish all of this enormous amount of learning" (p.29). He advocates collaborative learning where more experienced learners help those who are less able in both oral and written language development; children learn when they are actively engaged in activities which involve language and content skilfully interwoven. Teacher instruction, Smith says, should not insult the natural intelligence of children.

Vygotsky (1978) supports the concept of group dialogue or collaborative learning when he says, "The lack of recognition among

educators of ...the many ways in which an experienced learner can share his knowledge with a less advanced learner, limits the intellectual development of many students" (p.126). Tough (1979) also emphasizes that teachers' knowledge of the skilful use of dialogue is vitally important to develop an environment in which interaction supports learning; children need to use oral dialogue to think through concepts and operations if they are to reach an understanding which enables them to apply what was learned outside the lesson. MacLure, Phillips, and Wilkinson (1988) summarize the whole idea of using oracy to help facilitate the internalization of knowledge - "When children are 'doing discussion' they are learning ways of knowing: each discussion that enables them to consider related matters puts them nearer to a belief in knowledge as negotiable, ownable, and exciting" (p.81) and should facilitate content comprehension and retention. It is my contention that dialogue journal writing will help to address the oracy aspects of learning. When students carry on a written dialogue with their teacher, they must 'listen' to what the teacher says in his/her responses and prompts, and try to carry the discussion further through their subsequent written responses. Dialogue journals can serve to maximize the amount of discussion time available for individual students within content classrooms.

When students experience difficulties in content areas, it is important for teachers to have a full repertoire of strategies and techniques to help students develop competencies required for success. Interested in stimulating verbal learning within an existing curriculum, Calder and Antan (1970) demonstrate a variety of techniques and activities which can be applied in an interdisciplinary manner. They state that the

teaching-learning process has become one of inquiry rather than one of telling; "talking is not teaching and listening is not learning" (p.20). Calder and Antan (1970) agree that focusing on the real "stuff of education", reading, discussing, demonstrating, organizing, analyzing, and synthesizing, at a level where each child feels comfortable but stimulated, should help to ensure concept formation and content retention.

I have found that students often experience a great deal of difficulty with understanding and learning content information because the reading material we give them is much too difficult for them to handle, and the strategies we are asking them to employ are ones in which they may never have received any formal instruction. Storey (1982) found that "as children grow, reading outside structured reading classes becomes increasingly important. Reading for reinforcement of skills changes gradually into reading to select information from the content areas" (p.796). Based upon her experiences in trying to make content reading more meaningful for the children, she suggests a variety of experiences which use oral language to improve reading, and therefore facilitate learning. It is my feeling that dialogue journals could provide students with the opportunity to question and clarify what they are reading, therefore facilitating a much higher level of comprehension than would be possible without this dialogue with the teacher.

Reacting to concern about declining scores on standardized achievement tests, Moore and Readence (1981) cite several studies which support their contention that individual differences in reading achievement pose problems for teachers who lack specific workable techniques to accommodate these individual student differences. They then

suggest modifications in tests, presentations, or assignments to accommodate these individual differences and enhance the learner's ability to understand and interpret ideas in books and articles specific to each discipline. The strategies being employed by Moore and Readence all involve integrating language arts skills into content classrooms. We are also reminded by Lange (1983) that "teachers often lament the fact that science and social science vocabulary is too difficult for many students. Teachers must attempt to make these difficult but important words more meaningful for students, perhaps through skill activities" (p.402). She describes a method used in her classrooms to assist slow learners and challenge top students to improve reading and other language arts skills in content areas. She suggests that the unit approach often used in content areas readily allows for integration of this type across subject boundaries to enrich vocabulary and concept development. Cunningham and Cunningham (1987) suggest a strategy called a "feature matrix" to help integrate reading and writing instruction into a content class to assist students with learning specific content, as well as to provide them with another strategy which can improve their general ability to learn. These examples illustrate the fact that there are many methods and strategies which will enable teachers to implement the interdisciplinary approach being presented; all of them are effective in one way or another. But in my opinion, every teacher must assume the responsibility of providing instruction in the skills necessary for students to reach their fullest potential in all disciplines.

The data accumulated by Berliner (1981) confirmed that "the more time allocated to a content area of reading, the higher the academic

achievement in that content area" (p.206). His study concluded that "if academic learning time is a major factor in acquiring the knowledge and skill required to master the curriculum of a particular grade level for a particular content area, one can see that the school year does not contain as much academic learning time as might be desired" (p.212). It seems obvious then, that 'teamwork' should help to provide the time for both language arts teachers and content area teachers to get their jobs done to the best of their abilities. Education is undergoing rapid change and, with the tremendous time constraints imposed upon both teachers and students, I feel that we must look toward more cross-curriculum integration to increase effectiveness within our schools.

A great deal of research in recent years indicates that study skills must be taught in all classes, but it is important to remember that these skills do not transfer from one subject area to another unless a conscious effort is made to effect that transfer (Stoodt & Balboa, 1979). These researchers also tell us that greater student achievement is obtained when study skills are purposefully integrated with content instruction. I suggest that it is imperative therefore, for language arts specialists and content specialists to work together to enable students to become effective, independent learners.

Parker and Goodkin (1987) retrace the historic origins of the writing-across-the-curriculum (WAC) movement. Initially, they tell us, both spoken and written language were viewed as simply vehicles for communicating knowledge NOT for making sense of experience, but by 1968, teachers began to change the focus and discuss how 'talk' contributed to learning within their classrooms. This collaborative inquiry gave rise to

the language-across-the-curriculum (LAC) movement sponsored by the National Association for Teachers of English. "In its early days, LAC was truly a movement about the role of all uses of language in the learning of all school subjects, just as it was also about teachers becoming learners alongside their students. It was not about how to teach students to talk or write or read better, not that LAC proponents ignored or rejected those goals. Rather, it was a movement which involved a shift of focus from teaching to learning, from improvement in the mastery of forms to improvement in the use of language for thinking and learning" (Parker & Goodkin, 1987, p.11). We are also reminded by Parker and Goodkin (1987) how difficult it is to detect and measure learning. But, they tell us, writing can serve as a measure of learning if assignments require students to construct arguments which support 'real' points, to communicate knowledge to someone, to express a personal response to experiences, to create meaning and transform experiences, and to react to the responses made by others to their written products - applying knowledge to a broader area than the one where the information is given indicates real learning. Both incubation of ideas and multiple written drafts help students to think about, and to clarify material being learned. "Learning takes place through the person's internal reconstruction of interactional processes... learning occurs as people make connections, and it involves the intellectual operations of analysis and synthesis. Writing serves as a strategy for both" (Parker & Goodkin, 1987, p.177). It appears therefore, that carefully sequenced writing tasks do work well as a means of stimulating thought and learning.

There are hundreds of writing-across-the-curriculum programs in

existence throughout the school system today (McLeod & Shirley, 1988), and large scale assessments of some of the existing programs at the university level have shown that writing-across-the-curriculum is, indeed, an effective learning methodology (Young, 1985). Another assessment study, done on the programs developed in a high school, indicate that integrating writing-across-the-curriculum resulted in a dramatic improvement in general attitudes and abilities of both students and teachers (Ingmanson & Basile, 1986). This study showed that teachers improved their methodologies as they practised integration, and students also benefitted a great deal academically: writing abilities improved dramatically; basic language and mathematics skills improved significantly more than the district as a whole; and students displayed better grades and an improved interest in, and attitude towards, learning science (Ingmanson & Basile, 1986).

Since a heavily linguistic bias has pervaded the LAC concept, resulting in it being misunderstood and misapplied by many educators, the province of Saskatchewan has proposed a core curriculum comprised of two components: compulsory subjects - Kindergarten to Grade twelve, and common essential learnings (CELs) which permeate all the required areas of study (Gambell, 1989). These CELs, Gambell tells us, are skills, processes, values, and cognitive abilities which are relevant to all students in a wide range of situations. Based on the rationale that language is a tool for thinking and learning and is therefore central to the achievement of the aims of the whole curriculum; communication appears at the head of the list of CELs. Gambell further states that other provinces have tried to do something similar, but they have not met with as much success for two

apparent reasons: their LAC guides appeared as supplements to the English program, so only English teachers have taken the responsibility; and responsibility for developing and implementing language policies at the local level was left in the hands of individual school principals. In Saskatchewan, the CELs are independent of any particular subject area and their implementation has been placed in the hands of all teachers (Gambell, 1989). It seems to me that this concept directly addresses the benefits of implementing whole literacy strategies across all curricular areas; Saskatchewan's perspective appears to be exactly what is needed to make all teachers responsible for and excited about teaching kids to learn and to think within the framework of all prescribed subject areas. Perhaps Manitoba schools should follow Saskatchewan's lead.

For content-and-writing-rich courses to be truly successful, we are told by Fleming (1984), two assumptions must be considered: writing tasks must be part of a unified and coherent process; and writing should be used as a way of learning, not just a means of reflecting something already learned. "Informal and expressive writing allows students to think on paper, to reason through problems, to practice moving from concrete and discrete observations to more powerful generalizations" (p.27). Fleming (1984) tells us that this thinking on paper, if done frequently and in many modes, will lead students to develop thoughtfulness, insight, and discipline as writers and as learners. Responses from the teacher on writing assignments in content classes, we are told, should focus on challenging, guiding, suggesting, and questioning the content, presentation, and style of the writing, rather than the grammar and mechanics. (Fleming, 1984). Applebee (1984) agrees that when teachers



respond to student work, they need to focus attention "on the major areas of development rather than on the surface errors that are usually obvious but not always instructionally important" (p.185). What good is a perfectly written piece if it does not really say anything significant about the content being studied?

We are reminded by Paul (1985) that knowledge cannot be given to one person from another through memorization, with the expectation that it will be thought about and considered at a later time. Knowledge, he says, is rather a distinctive construction by the learner through a rational use of his mental processes, requiring the learner to wait for and weigh evidence before moving on to a state of belief. It is suggested by Fleming (1985) that training in thinking processes should be woven into the curricula of each subject area. In dealing with new and difficult content, she says, we first grasp key concepts, and then through language, we gradually mould these developing insights into more cohesive forms, eventually enabling ourselves to converse and to write fluently about the new knowledge we have internalized. Dialogue journal writing sounds like the ideal strategy to accomplish this.

Bullock's (1975) study was based upon the premise that the role that language plays in generating knowledge and producing new forms of behavior lies at the very core of human existence. He suggests that "to bring knowledge into being is a formulating process, and language is its ordinary means ... [of developing] individual context for a new piece of information, the forging of the links that give it meaning" (p.50). According to Goodman, Smith, Meredith, and Goodman (1987), to know something is to have it become a part of oneself - "...the thing is not

known until it is discussed and named, and its interrelationship with other things is not understood until language embodies the idea" (p.95). Goodman et al claim that intellectual education is not memorizing words and facts, and it is not certain significant experiences; it is the interrelationship between experiences and language - knowing involves perceiving new data, conceptualizing and generalizing these perceptions, and presenting these perceptions to others. Since no one could possibly ever know all there is to know in any discipline, Goodman et al maintain that students must learn how to use disciplines to solve problems and understand phenomenon. Children must become comfortable with the language of the disciplines in order to "embrace ideas that attempt to describe the world from different vantage points" (p.149). Since the schools cannot possibly teach all there is to know about any subject, they must do a good job of teaching how to learn, and "how" relies heavily on competencies in the language arts (Goodman et al, 1987).

### Summary

The literature reviewed indicates that, to improve content competencies: children need direct instruction in all aspects of the language arts as they apply to the discipline being studied; children should be actively engaged in the learning process, skilfully interweaving language and content; children must be helped to apply their new knowledge outside the classroom; study skills must be taught within content classes to be effective; writing is perhaps one of the best vehicles to measure learning; and students must be taught 'how to learn'. In short, learning is more than memorizing facts in isolation - it requires relating

knowledge to personal experience, and since language embodies ideas, focusing on language arts activities in content areas is one of the best methods for internalizing knowledge.

I feel that it is important therefore, for teachers to reassess their possibly outdated modes of teaching in which the teacher is the disseminator of information, and to let the students take a more active role in discussing and writing about the material, in order to facilitate learning in content classrooms. Learning problems in content areas are often based on poor language arts skills, and improving these skills should result in improved grades. I have found that the best 'test' of whether a student understands a concept is to have him/her teach it to someone else. The knowledge must be understood to be verbalized in a meaningful way. It is my contention that language arts teachers do not have time to adequately teach and practice all the skills students must learn, in contrived settings, and effective content area teachers do not have time to not teach language arts activities necessary for students to meet with success in their disciplines. If students are having difficulty achieving good grades in content area classes, perhaps it is time for content teachers to stop depending upon outdated instructional practices. If the methodologies being used are ineffective, it is time to become more innovative and collaborative to try to rectify the problem. Education should foster the desire to improve one's education, and good teachers should be filled with this same desire for improvement.

Let us turn now to a review of the literature which suggests that integration also improves students' ability to engage in higher levels of thinking.

## INTEGRATION OF LANGUAGE ARTS FACILITATES THINKING

Vygotsky (1962) states that "the child's intellectual growth is contingent on his mastering the social means of thought, that is, language" (p.51). By using language freely in content classrooms to help internalize ideas and concepts therefore, it seems logical to assume that students should find themselves achieving much higher levels of thinking ability. In discussing the aims of education and the nature of subject matter, Dewey (1932) shares his philosophy about the purposes for education "...the aim of education is to enable individuals to continue their education ...the object and reward of learning is continued capacity for growth" (p.117). He continues, "The educator's part in the enterprise of education is to furnish the environment which stimulates responses and directs the learner's course" (p.212). It is my contention that teachers who integrate language arts instruction across the curriculum should find themselves providing learning environments conducive to improving thinking skills. This contention is supported by Searle (1984) who suggests that the expressive mode is fundamental to help learners make sense of their new experiences; expressing knowledge in comfortable language helps to come to grips with the more technical language of texts.

To achieve higher levels of thinking, I maintain that students must stretch and extend their language abilities to provide a means of negotiating and interpreting the ideas and concepts being considered. Goodman, Smith, Meredith, and Goodman (1987) agree that "language and thinking are so interrelated in most forms of sophisticated thinking that they must be dealt with together" (p.130). They suggest that language is

the main vehicle for teaching thinking and reasoning; language development is shaped by our need to understand and similarly, language shapes the thoughts we try to express. Goodman et al contend that teachers should help children stretch their thinking horizontally as well as encouraging their vertical movement upward into the next stage or level of thinking, and this process, they suggest, can be accommodated quite efficiently through open-ended questioning techniques in content classrooms.

Many articles reviewed give testimony to the power of oracy to stimulate and develop thinking. Walden's (1969) book stresses the importance of speech to the whole of education and the interdependence of language and thought, pointing out that those with power over spoken language are better able to make distinctions, modify ideas, handle emphasis through subordination, and control unity through transitions and arrangement. Walden (1969) agrees that "such powers cannot be gained through drills and exercises. Thought - and its component expression through spoken language - flourishes best in situations where learners are deeply involved and genuinely concerned" (p.102). MacLure, Phillips, and Wilkinson (1988) discuss how students use collaborative talk, or discussion, to enable and empower learning. They found that "the process of becoming literate can potentially take place through speech as well as through engagement with written language" (p.106). Assuming that the prime function of schools is to develop effective literate thinkers, the authors suggest that collaborative talk can help to achieve this objective, playing a crucial part in developing the thinking skills of students in all subject areas.

Another concept stressed in many articles is the necessity for

teachers to stimulate inquiry and to become more effective as facilitators of learning. Searle (1984) maintains that teachers must learn to teach less so students can learn more; they must become models and collaborators in the learning process and allow students to make effective use of the language they are being taught. Children can achieve far beyond expectations when the teacher's role shifts from instructor to "manipulator of sources from which pupils are able to learn" (Searle, 1984, p.123). It is my contention that dialogue journals should provide an excellent forum for achieving these goals.

Kitagawa (1982) investigated the effects of having children assume the role of questioner or discussion leader, rather than the role of "answerer of questions" during discussions. This rearranged focus helped her students become more engaged with the topic, as well as developing higher-level thinking skills which carried over to related activities. Emphasis on question-brain-storming, Kitagawa suggests, often serves to break out of a well-established mold and foster growth in the students' thinking. Fabun (1971) agrees that, in an educational setting, the creative person is more likely to express his creativity if he is exposed to teachers and curricula that place a premium upon questions rather than answers and which reward curiosity rather than learning by rote and conformity" (p.24). Content classrooms which openly encourage language arts activities such as discussion, debate, responding to higher-level questions, and encouraging the inquiry approach to learning should help older students to maintain this innate curiosity and wonder of their earlier years, and to build habits of thinking and questioning that will carry over and positively affect their lives when they reach adulthood

(Fabun, 1971). Therefore we must, he says, propagate "an educational system that rewards and encourages free inquiry, rather than acting solely as a means of transmitting the already discovered and the already 'known'" (p.26). McClusky and Walker (1986) agree completely with Fabun when they say "...why should only the gifted learn to think creatively? Everybody should get the opportunity to develop their thinking skills" (p.71). Children, they contend, need more than teacher-directed classrooms can provide. They need a facilitator-guided style which helps students move toward self-directed learning. "This approach features the building of independent investigative skills; the emphasis is on learning how to learn - on process rather than on content. Emphasizing invention, higher level thinking and independent study and research (largely language arts skills) will no doubt benefit many students, especially those with special abilities and talents" (McClusky & Walker, 1986, p.108). Many of the programs suggested by McClusky and Walker for gifted students involve extensive use of language skills and content which is interdisciplinary and relevant to the students. Dialogue journal writing in content areas would be entirely compatible with their philosophy.

I am convinced that a creative and consistent focus on language arts activities cannot help but facilitate thinking. When students are encouraged to interact with others and to do something with the knowledge they have acquired, the stage is set for teachers to provide the stimulus required to enrich and extend thinking. Yonan (1982) found that teaching language arts skills, modelling good presentations, and helping the children to experiment with styles such as using the first person technique when making their presentations in content classrooms, helped

the children to develop their thinking skills as well as their language skills as they communicated what they had learned to others in their class in an interesting and exciting way. Thaiss and Suhor (1982) summarized the ideas of many researchers who suggest that children learn best when they are allowed to talk about and write about perceptions and solutions to problems. They found that, since humans actively interpret the world rather than passively absorbing it, enabling children to use their own data facilitated retention. Thaiss and Suhor conclude that using language-across-the-curriculum: encourages experiential learning, making comparisons, and interactional scaffolding; develops independence; and appears to play a major role in facilitating transition from stage to stage in thinking sophistication.

Language is fundamental to thinking and learning and unfortunately, we sometimes miss opportunities to fully develop the thinking/learning opportunities of children through departmentalizing subjects and curricula and through a failure to teach some form of metacognition. Humans are active participants in their existence who can competently affect changes to their world and themselves (Vygotsky, 1978). Parker and Goodkin (1987) agree that language plays a powerful role in all school activities - in fact, "Language use is more totally, intimately, and irrevocably involved in school thinking and learning, of whatever kinds, than any other kind of activity" (p.31). They state that language serves as a means of thinking - a manifestation of thought, and it is important for teachers to make provision for a wide range of language usage in their classrooms to facilitate a variety of kinds of thinking for students. Parker and Goodkin (1987) suggest that both curricula and teaching



techniques should support the integration of all four language modes and provide for social interactions in which students use language to solve the learning problems posed by the curriculum. Teachers must also provide students with opportunities to reflect on and formulate theories about their own thinking and learning processes (Parker and Goodkin, 1987).

Many researchers lend support to the idea of using writing as a vehicle for developing and extending thinking. In a study done to investigate the effect of employing reading and writing strategies together as a means of developing higher levels of thinking, Tierney and Others (1989) found that "reading and writing in combination have the potential to contribute in powerful ways to thinking" (p.166); the symbiosis which resulted when the two modes of learning were skilfully integrated afforded students the opportunity to think more critically, achieving multiple perspectives and a more evaluative stance. Johnson and Gill (1987) described a school-wide writing project which focused on writing-across-the-curriculum as a means of improving depth of thinking and learning in all school subjects at the junior high school level. As transactional writing was stressed and developed, experimentation led to the discovery, by both teachers and students, of the additional power of writing in the expressive mode. They found that understanding the material became essential to the assignment, and writing enabled an expression of that understanding in a personal way. Argumentation skills and analytical thinking improved tremendously, along with increased abilities in inventive application of knowledge, making value judgements, introspection, and taking a stance (Johnson & Gill, 1987).

Describing the work done by a college professor who used writing as

a means of learning in a freshmen history course, Kelder (1987) states that students were constantly asked to analyze, define, evaluate, compare and contrast - writing tasks for which they were poorly prepared. They had to learn to use writing as a means of moving from a personal knowledge base into the world of historical concepts. Kelder reports that students learned that their written responses added another dimension to the creation of historical meaning; they were redefining and shaping their place in the historical scheme of things. "Writing assignments were designed to structure a response that would fit into the framework of the history class and, consequently, move students from a familiar experience into another way of seeing or understanding" (Kelder, 1987, p.15). Kelder tells us that through the genre of personal narrative writing, students learned to evaluate experience in a literary manner, explaining its historical significance and enhancing self-knowledge. "By writing in the discipline, students are at the threshold of developing those critical thinking skills which are not only fundamental to the acts of sophisticated reading and writing, but ...are the foundation for defining an enlightened and educated citizen in a democracy" (Kelder, 1987, p.19).

I have found that writing is perhaps one of the most important language activities for formulating, extending, and refining thoughts, and using writing to assist with learning is an extremely powerful strategy. The views of many researchers who also support the writing-to-learn philosophy are presented by McGinley and Tierney (1988). They review recent research , attempting to clarify how writing influences thinking and learning, and to examine the methodologies used in each study to see to what extent students are permitted to direct their own learning and to

use writing to shape thought. Their results generally support the view that writing helps to shape thinking about the author's work and the students' approach to the text. Personal, interpretive, and evaluative statements often appear in students' writings, and they tend to remember more of the content after engaging in writing activities, and to experience deeper cognitive involvement in the tasks assigned (McGinley & Tierney, 1988).

When writing was used in Atwell's (1990) third-grade classroom in the form of learning logs, she found them to be a natural vehicle to stimulate critical thinking during ordinary classroom activities. She reports that "within the pages of their logs I found so much evidence of thinking going on, so many critical thinking skills learned and applied in context, so convincing a case for using learning logs across the curriculum to promote student thoughtfulness" (p.36). She continues, "when kids are asked to write regularly in a variety of ways for many purposes, critical thinking becomes the normal activity of the classroom. Learning logs are an ideal vehicle for thinking, for making meaning out of experience" (p.51).

Based on the contention by many researchers that "thinking skills are taught best when related to some content ...and writing provides a particularly welcoming context for thinking deeply about such content" (p.3), Langer and Applebee (1987) describe a study that focused on two areas - how different writing tasks affect learning, and whether the implementation of classroom writing activities would support instructional goals in content classrooms. The project lasted for more than three years, and twenty-three Science, Social Studies, English, and Home

Economics teachers, and five hundred sixty-six students participated in the project. Langer and Applebee (1987) report that teachers developed their own writing activities designed to reflect their curricular goals and to support student thinking and learning about the course content. Types of writing activities, evaluation procedures, changes in the teachers' approaches to teaching, and how writing helped the students to learn the content presented, were studied. Langer and Applebee concluded that "...when information is manipulated in more complex ways, it tends to be better understood and better remembered. This progress toward deeper understanding served as evidence for learning. The ability to select appropriate writing activities as well as the ability to engage successfully in them will, we think, enhance students' thinking and reasoning" (Langer & Applebee, 1987, p.136-137).

I have found that, with all the new insights and theories being investigated and researched, and with teachers and parents beginning to question the philosophies and methodologies of their particular schools, the field of education is presently experiencing a time of great change. In a discussion on how people view education 'today' as compared to 'yesterday', Greene (1978) reminds us that our memories of the past are very selective and wishful expectations on the part of parents are often being imposed as demands upon the schools. We must extend our learning communities outwards from the schools, she suggests, and expound the concept of "the kind of literacy that enables each person, from his or her own center to interpret his or her experiences by learning to look through the multiple perspectives available in the culture; those provided by other human life experiences, those opened by the disciplines, those made

possible by the several arts. Of course skill mastery is necessary; the schools have a great responsibility for enabling people to achieve it. But, the demand for such mastery has somehow to be reconciled with the requirements of critical thought" (Greene, 1978, p.80). In moving towards this new 'wide-awakeness', she suggests that the arts and the disciplines that compose the humanities should be at the core of the curriculum and that "if dialogue and encounter are encouraged at every point, it might be possible to break through the artificial separations that make interdisciplinary study so difficult to achieve" (Greene, 1978, p.165). Once students can pose questions relevant to their lives, they will seek consciously and critically for relevant meanings that promote true understanding and sense-making (Greene, 1978).

Based on inservices and workshops being advertised throughout the schools, it appears that educators today may, finally, be turning their focus towards teaching critical thinking skills rather than learning by rote. However, Wilson (1988) suggests that schools are actually falling short of their ability to teach higher-level thinking skills. "Rare is any teacher in any discipline who does not profess to be teaching students to think..." (p.543), but are we succeeding in meeting this objective? Wilson warns us, as Smith (1986) did, that "slickly packaged materials do not necessarily create good critical thinkers" (p.543). In order for schools to be successful in teaching critical thinking skills, Wilson warns, they need to revolutionize methodologies and throw out prepackaged skills lessons which have little application in the real world; learners must do more than soak up bits and pieces of information - they must analyze, synthesize, and apply their knowledge to other situations.

Students need to share ideas, formulate arguments, and discuss issues in a social (group) setting, and fundamental changes must be made in classroom structure and teaching methodologies as more teachers begin to include the teaching of oracy and literacy skills into their content classrooms to facilitate the development of critical thinking skills in students (Wilson, 1988).

### Summary

The literature reviewed in this section stresses the interdependence of language and thought. It further suggests that: the purpose of education is to teach children to learn; thought flourishes best when learners are deeply involved in the learning process; teachers need to become better facilitators of learning; children develop independence and become literate thinkers through language; writing is a powerful tool for stimulating growth in thinking; children need to reflect on and formulate theories about their own thinking/learning processes; and teachers are encouraged to include instruction in oracy and literacy skills in content classes to facilitate the development of critical thinking skills in students.

My experience has shown that by the time students reach the middle years, each class will be widely diversified in terms of academic abilities and individual student needs, and it becomes increasingly difficult for content area teachers to be able to help all students reach their fullest potential. But integration of language arts across the curriculum can definitely help to meet the learning/thinking needs of all children. Focusing on language skills allows learners to capitalize on

their individual strengths, to learn from others, and to learn to be supportive of those who experience difficulties, as each participant makes an individual contribution to a collective whole (Ragan & Shepherd, 1971) and stretches and extends his/her abilities as a literate thinker.

Let us turn now to an examination of the literature dealing with journal writing as a vehicle for successfully integrating language arts into the content areas to extend language, learning, and thinking.

## STUDENT JOURNALS - ONE STRATEGY FOR INTEGRATION

There are many ways in which teachers can incorporate language arts instruction into their content area classrooms, and I feel that it is important to provide students with plenty of variety. One very effective method of promoting integration is through the use of student journals. There are many types of journals and learning logs in use today, which serve many purposes and, according to the literature reviewed, they all seem to have proven themselves effective as thinking/learning tools for students of all ages.

A great deal of literature reviewed indicates that journal writing is an excellent way to improve learning (both language arts and content) as well as thinking; students have the opportunity to take risks and experiment without fear of being wrong. Case studies of students as young as third-grade show that journal writing: allows teachers to see how students view themselves in relation to the rest of the world and to develop elaborate, individualized assignments based on this knowledge;

allows students to set direction and to make judgements without risk of censure or correction; allows students to rehearse thoughts, to explore issues, and to establish their own position without being influenced by others; and allows writers to use words with authority and to experiment with language and writing style (Fulwiler, 1985). Fulwiler (1985) further suggests that the writing feeds the talking in a classroom and leads to understanding. Focusing on both the contents of the journal and the process through which students learn to write and to think and to share their writing and thinking with others, Winston and Low (1990) conclude that "all children can learn to write, given time, ownership, and response" (p.46).

Based on actual classroom experiences, Gere (1985) has found that writing-to-learn allows students to rehearse ideas and concepts until they are familiar with them, and it also helps students to recognize and apply their understanding of course materials and to reveal new elements of the works being studied. She states that there is no fear of being wrong associated with journal writing and every student's experience is valid - creating a learning climate which frees the student and contributes to self-worth. We are told by Gere (1985) that one of the primary functions of writing-to-learn is to stimulate thought, and when students evaluate journal writing, they "mention thinking processes frequently in their evaluation, and their comments confirm my belief that writing to learn develops their ability to ...become thinking learners" (p.174).

After using response journals in her literature classes for some time, Wollman-Bonilla (1989) agrees with Gere that one of the things students enjoy about journals is the fact that there are no right answers,



so they are more willing to tackle problems and explore ideas without fear of being wrong. She appreciates the use of journals because they are tailored to each child's individual needs and interests, and they are powerful tools for the teachers to help assess students' level of comprehension and ability in the subject being studied, as well as their attitudes and skill in expressing ideas. Writing a response requires students to make some sense of the text, and teacher responses to their writing provide them with encouragement, guidance, and articulation of strategies/ideas that might be of help to them. Through the experience of response journals, Wollman-Bonilla (1989) tells us, students express a sense of accomplishment in their discoveries, extend their developing knowledge, increase their motivation to learn, and grow in confidence and independence as learners.

After a thorough study of a meta-analysis generated to study various modes and foci of writing instruction, Hillocks (1986) suggests that the most effective mode of instruction is an "environmental" mode which brings teacher, student, and materials into balance. It is the teacher's job to plan and use activities which will lead the students to high levels of interaction concerning specific problems which parallel those they encounter in various kinds of writing. Hillocks (1986) advocates a focus of instruction which emphasizes inquiry and promotes high-level thinking skills. This is exactly the type of activity being proposed by the other authors reviewed - integrating writing instruction into specific content areas, using journals to meet particular needs for expression and/or creation of knowledge.

My experience has shown that journals also serve as an excellent

means for teachers to assess both the quantity and the quality of teaching/learning that is happening in the classroom. Konopak, Martin, and Martin (1987) designed a study to assess the effects of expressive writing tasks on student learning in the content areas. They found that students who worked on explanatory writing samples did just as well on an objective posttest as those who worked on traditional comprehension questions, and they performed much better than the control group on an assigned writing task. All evidence suggested that the writing practice enabled students to focus on details as well as to rehearse the writing task, and Konopak et al (1987) conclude that "such a strategy may prove to be more effective in the content area class than more traditional practices" (p.286). Kroft (1986) also describes the learning log or journal as "probably the most productive writing and learning strategy available to students and teachers in any subject area" (p.11). His experiences showed that, through journal writing, students can be led to delve deeply into the process of a difficult operation or sequence or to explore their feelings about their learning, and through sharing their experiences with the class, students begin to discern similarities and differences in one another's learning experiences, as well as different attitudes towards the topics discussed. Kroft (1986) concludes that journal writing on a regular basis can aid the student in becoming a better critical thinker, as well as helping the teacher to quickly assess student needs. After using learning logs extensively in her classroom, Atwell (1990) confirms Kroft's feelings when she reports that her fourth-grade students grew socially, emotionally, and academically, becoming serious learners and writers, and that she felt that learning logs were

partly responsible for that growth. "Logs helped my students focus on information, record it, and retrieve it ... logs brought them together as a learning community and nudged them to take an active stance as learners" (Atwell, 1990, p.60).

The literature reviewed further indicates that journals have proven to be effective in a wide variety of subject areas. In an article which discusses writing-across-the-curriculum, Wasson-Ellam (1987) tells us that writing for the purpose of learning should be fostered in classroom contexts, as it helps students to personalize their knowledge. She suggests that the use of a journal or learning log is one of the most versatile writing-to-learn strategies, which facilitates students going beyond the information of the content curriculum being studied. Students also go beyond memorizing, transcribing, and reciting, and begin to develop ownership of knowledge, facilitated and enhanced through writing in their own terms about the concepts being learned (Wasson-Ellam, 1987). Examining a research project which asked first-grade students to keep a journal as part of a mathematics learning center, Wasson-Ellam (1987) states that writing became a tool for discovery - an aid to learning, as beginning writers reflected upon knowledge and worked out emerging ideas. Their journal entries centered around things students thought to be interesting and important; they revealed problems, clarified thinking, and generated ideas and questions.

Jenkinson (1988) reminds teachers that they should not grade journals - they should rather collect them periodically and "make encouraging comments or ask questions that will prompt students to write more" (p.715). Journals, he says, are places for experimentation and for

making new discoveries. They can be effective in Mathematics classes to explain the steps used in solving story problems, to explain how to solve math questions, to define new words, and to explain errors on homework or quizzes. Jenkinson tells us that this type of journal writing enables the teacher to quickly discover what needs to be explained again to help students understand the concepts, and also results in students scoring higher on posttests than their counterparts who did not use writing to help them learn. Golub (1986) confirms the effectiveness of mathematics journals, stating that students reaped the rewards of a longer lasting understanding of a new concept as well as improved writing skills. The teacher, he says, also gains knowledge regarding what the students had actually learned and what needed to be retaught, as well as the knowledge that "the same thinking skills that helped them become better writers helped them become better mathematicians as well" (p.151).

Journals can also be used, Jenkinson (1988) suggests, in a high school social studies class to write a story about a specific incident or period, to conduct an imaginary interview with a major figure of the period, to write a news story, a script for a play, or an unsent letter responding to a particular action or statement in a book being studied. These are often creative pieces, reflecting an understanding of the incident and the period, as well as a discovery of ways to bring that incident to life for an audience, and they can help teachers to investigate the effectiveness of their own teaching and turn their classrooms into places where teachers and students learn together, collaboratively (Jenkinson, 1988). Jenkinson states that "Today, more and more teachers of all disciplines at all levels of instruction recognize

that writing can be a powerful catalyst for learning" (p.716).

In a project designed to integrate and develop the reading, thinking, and writing skills of students in the sciences and social sciences, Golub (1986) reports one of the reasons for its success was the fact that students perceived the assignment as practical and useful. Students engaged in three modes of thought - reflection, analysis, and argumentation, and combined writing about reading with more experiential heuristics. Final rewritten papers were "clearly superior to the first efforts in that the hypotheses and discussions more completely and clearly account[ed] for the data" (Golub, 1986, p.33).

In an attempt to investigate how students could use journals to sort out and think through important issues in their lives, Buttery and Allan (1981) had students write two journal entries a week in guidance classes, about any topic that was based on their experiences or thoughts. Buttery and Allan found that the entries were rich in social and emotional themes, writing skills improved dramatically, students began to value good writing and each other's opinion, students wrote about developmental issues which normally would not have been shared with parents or teachers and as ease in expressing feelings on paper developed, the influence of the journals began to extend beyond the classroom into family life and to become an effective means of solving social problems. Journal writing allowed students to raise their own concerns, to develop deeper understanding, to solve problems, and to improve academically; "this one strategy appears to benefit the emotional, social, and academic areas of a student's life" (Buttery & Allan, 1987, p.138).

In my opinion, using a double-entry journal would also be an

excellent method of implementing the thesis being reviewed in this paper. Having students write their first journal entry as a response statement "activates present feelings, which, in turn, aid in the recall of prior knowledge" (Nugent & Nugent, 1987). Then, during a small group discussion, students share their responses with others and collaboratively synthesize individual responses into one group response, (this is done orally) and finally, "with new insight, with further understanding, and with heightened perceptions, the student writes the second formal entry. Here is the opportunity for each writer to reflect, to discover, to create, and finally to articulate thoughts and feelings" (Nugent & Nugent, 1987, p.329). This sequence of reading, writing, sharing, synthesizing, and then writing again provides for a full exploration of the subject, assisting students to create new knowledge and to reflect on the changes in their thinking (Nugent & Nugent, 1987).

Reading logs were used very successfully by eleventh grade English students to respond to the literature being studied. Wilson (1989) reports that using reading logs enabled students to write honestly, respond deeply, think and share without intimidation, admit emotions, and become excited about what they were doing. She suggests that more students than we could ever imagine may be capable of extremely deep responses to literature using this technique.

Since journals promote introspection along with speculation, increase self-knowledge, and provide a basis for acquiring other knowledge, they are as valuable to students studying the sciences as they are to those studying the humanities (Fulwiler & Young, 1982). Fulwiler and Young (1982) make several statements about the usefulness of journals

- journals are interdisciplinary and developmental, almost always ensuring cognitive growth within a short period of time, and the discovery function of writing also helps students, in all disciplines, to analyze the processes they use to solve problems. They further contend that, by recording the strategies used, students provide themselves with an array of problem-solving techniques from which to choose. Narrative logs also record what is done for each class or project and provide a record of the students' understanding of the material discussed. Finally, they suggest that asking for responses to questions and ideas in writing is a demanding task requiring students to coordinate knowledge with both logic and rhetoric; students must be profoundly involved in the learning process, demonstrating not only knowledge, but also the ability to organize and explain that knowledge (Fulwiler & Young, 1982).

Investigating why some writing-across-the-curriculum programs have failed to become accepted as a pedagogical reality, Hamilton-Wieler (1987) suggests that the most obvious reasons include: a lack of understanding of what the WAC concept implies in terms of pedagogy (assuming that writing is what is being taught in WAC programs); an assumption that English teachers will take a leadership role in implementing the program; and the assumption that writing instruction is only marginally connected to content area learning. For programs to be successful, Hamilton-Wieler suggests that schools must draw upon the subject area teachers' "discipline-specific knowledge of writing pedagogy" (p.38), that all teachers must acquire a fundamental understanding of how students use language for learning, and opportunities must be provided for teachers to engage in collaborative, cross-disciplinary discussions about the nature

of writing. Hightshue, Ryan, McKenna, Tower, and Brumley (1988) remind us that "including writing in the content areas should not be an afterthought, an unwelcome addition, a burden on the teacher. Rather, writing should be an integral part of every subject in junior and senior high school, for writing can help students learn subject matter" (p.225).

Journals are being suggested as one of many techniques which can help students learn through integration of language arts into content areas. They are not being suggested as a substitute for oral discussion, but sometimes they do provide an effective alternative. I have found that it is often impossible to give each student an opportunity to express his opinion orally and to receive feedback from the teacher as well, within the confines of a single class period. However, since dialogue has proven to be an effective means of learning, Shuy (1987) examines a way to increase the amount of dialogue taking place in a classroom. After comparing written and oral dialogue, he concludes that dialogue journals: allow students to generate the topics; decrease the number of questions asked by teachers and increase the number and quality of questions asked by students; change classroom responses from eighty percent reporting and ten percent personal when given orally, to fifteen percent reporting and fifty percent personal in journals; improve process thinking and higher-level language functions which require reasoning; and increase cognitive engagement from three percent orally to twenty-three percent when written. He argues that, since children learn and develop higher-level thinking and depth of appreciation and understanding through dialogue, and since oral dialogue is so difficult to sustain effectively in a classroom, written dialogue can serve as an effective substitute.



Even very young children can learn to write about what they are learning in content classes by using paragraph frames, or response frames (Cudd & Roberts, 1989) to introduce them to some of the organizational structures authors use to convey information. Cudd and Roberts (1989) suggest that this will help students to "use and understand the transitional devices often omitted in elementary content area texts. Thus, they will be better prepared to understand and use such transitions when reading and writing in the more heavily content oriented intermediate grades" (Cudd & Roberts, 1989, p.404).

Journal writing is not only useful as a learning aide for students, it also works extremely well for teachers who, in my opinion, should always be learners too. Atwell (1990) reports that logs have been instrumental in assisting her in becoming a better teacher. Logs helped her to evaluate her teaching and the success of a lesson, to evaluate students' learning, to adjust strategies, and to change and improve lessons. She tells us that "logs provide me with the motivation to change, and they keep my enthusiasm for teaching high" (p.68). Voss (1988) tells us that keeping a journal also clarified the processes and strategies that she employed as she learned something, as well as leading her towards implementing new processes in her teaching. Journals not only brought order and organization to her learning, but also helped to personalize the knowledge by connecting it to other things that were already known. Voss sums up her journal experience when she says, "My journal writing not only led me to discoveries about how I learn; it helped me learn" (p.672).

## Summary

The literature reviewed clearly shows that journal writing helps to generate and work out emerging ideas; to personalize knowledge; to reflect upon knowledge and how we learn; to set direction; to reveal problems; to clarify thinking; to make judgements; to explore issues; to establish a position; to explore feelings and attitudes and write honestly; to learn to value opinions of others; to improve language arts competencies, content retention and concept formation; and to facilitate higher-level thinking. Journals also foster a sense of confidence, accomplishment, motivation, and collaboration within the classroom, and can be used effectively with all ages, in a variety of disciplines and circumstances.

Through this review of literature, a convincing argument has developed to suggest that having students keep a journal to respond to what is being learned in content classes is an effective means to improve their language arts competencies, content area competencies, and thinking abilities. By responding to what they have heard and read within the classroom, students develop knowledge, ask questions, and clarify concepts, and, through teacher and peer responses and interactions, they extend, enrich, and reformulate the knowledge they have created. Having the opportunity to experiment with language and rehearse what they want to say in a non-threatening atmosphere develops confidence, creativity, and writing style, and provides the forum for reflecting on their own thinking and learning. Interaction with others encourages the development of argumentation, persuasion, and critical thinking, and provides a forum for creating a deeper understanding of the concepts and personalizing the knowledge so it can be more easily retained. Although there are many

effective strategies for integrating language arts into content areas to develop language, learning, and thinking, journal writing certainly appears to be one of the most stimulating and rewarding strategies for both students and teachers.

## CONCLUSION

The literature reviewed has shown clearly that integration of language arts into content classes serves a multiple purpose: language skills improve through using them in meaningful ways; concepts are better understood and content is easier to retain after these meaningful activities; and students begin to demonstrate more sophisticated thinking skills. I have found that many exciting things are being done in schools today with peer teaching and editing, group discussions, learning centers, journal writing, and direct teaching of language arts skills by content teachers who are not afraid to take a risk and try new ideas. These group interactions develop both language arts skills and content knowledge (Moffett & Wagner, 1983).

Journal writing does work as a means of integrating writing-across-the-curriculum. Through journal writing, children have the opportunity to do many things which develop them as writers, learners, and thinkers: they interact with knowledge and construct meaning for themselves; they experiment with ways to express themselves; they apply and stretch their thinking abilities; and they personalize and internalize knowledge. Through these journals, teachers are provided with a rare and rewarding

experience as students open up a window on their inner thoughts and feelings, ask questions important to them, and seek clarification of material that has been encountered and not fully understood. Journal writing provides the opportunity to personalize the teaching/learning experience, resulting in increased motivation to learn and often unbelievable growth in language, learning, and thinking abilities of students.

## CHAPTER 3

# DESIGN AND PROCEDURES

This study incorporates the concepts of 'writing-across-the-curriculum', 'writing-to-learn', and 'dialogue as the heart of learning'. Its primary purpose is to investigate whether student dialogue journal writing could prove to be an effective strategy to assist students in middle-years classrooms to achieve higher levels of writing, thinking, and performing in the content areas.

## RESEARCH QUESTIONS

Research questions to be answered as a result of this study include:

a) Does the use of response journals in content classrooms help students to develop a more positive attitude about themselves as writers, and to feel more comfortable and self-assured when asked to write responses which are to be evaluated by the teacher?

b) Does engaging in a dialogue journal writing experience which includes teacher responses that praise strengths and encourage experimentation, help the student's written product to improve?

c) Does practice in expressing content knowledge in written form help the student to display improvement in long-answer test responses and therefore, to achieve higher grades on tests?

d) Does the type of student/teacher dialogue/interaction taking

place through response journals in content classes, assist students in retaining content knowledge?

e) Does individualized attention provided through teacher responses and prompts in the dialogue journals assist students in stretching their thinking within the discipline being studied and enable each student to more capably handle written responses to higher-level thinking questions?

f) How do teachers and students feel about dialogue journals as a strategy for enabling students to facilitate growth in writing and thinking abilities?

## SUBJECTS

Eight students were selected for this study from among the "middle years population" at Plum Coulee School - a rural school of approximately two hundred seventy students, situated in the Garden Valley School Division in south-central Manitoba. These students are representative of a fairly stable, middle-class socio-economic area which focuses on farming and industry as the main means of employment. The subjects were chosen from intact classrooms and were nominated by classroom teachers based upon the following criteria:

1. an average general ability level;
2. the ability to work independently on an assignment that is different from that on which the rest of the class is working;
3. the ability to work well in a group, and the willingness to share information and ideas with others;

4. a reasonable level of comfort with the writing process;
5. both student and parent willingness to be involved in this research project; and
6. a feeling on the part of the teacher that the students were not working up to potential in the area of written expression to higher-level thinking questions, but that the type of approach being investigated would possibly be beneficial in helping the students to reach their potential.

From among the students nominated by the classroom teachers to take part in this study, two were randomly selected from each class; no gender limitations were imposed, as this was not a factor to be investigated in this study. Subjects selected comprised the following representation: two girls from a grade four science class; one girl and one boy from a grade five social studies class; one girl and one boy from a grade seven social studies class; and one girl and one boy from a grade eight science class.

#### Rationale for Selection Criteria

The above criteria for selection were chosen for a variety of reasons. An 'average' ability level was selected because this group represents the largest portion of a 'normal' classroom. Since there was no intention to focus on studying differences between ability levels as part of this study, it was decided that selecting a more homogeneous grouping would allow a bit of control over the 'ability level' variable. The non-distractibility criteria was important because the selected group would be working on this study while the rest of the class completed other

writing assignments as assigned by the teacher. It was felt that highly distractible students would not have produced reliable data under these circumstances. Reasonably comfortable group skills were important because, if discussions took place within class periods, this group would need to work together throughout the duration of the study. Negative group dynamics could also have resulted in unreliable data. Students were to be reasonably comfortable with the writing process because I do not believe that struggling writers/readers would be able to experience much success with a project of this type (as evidenced by student Gr.7 #2). Student and parent willingness to take part was required for obvious reasons - it was necessary to have their cooperation and their permission to satisfy the members of the Garden Valley School Division Board of Trustees, as well as the Ethics Committee of the University of Manitoba. Since the intent of the study was to investigate whether or not this strategy would assist students in stretching their abilities, and coming closer to reaching their writing/learning/thinking potential, targeted students were ones who would 'normally' be selected for employment of this strategy by competent teachers who are aiming for success. The intent was to make the group as close as possible to one which would probably be chosen by classroom teachers under 'normal', non-treatment conditions.

## FORMAT OF THE STUDY

This study has all the credibility and reliability of an action research study. The teachers and students were the researchers, actively



involved in collecting and interpreting data and using the results to help improve both practices and practitioners within the school setting. However, since the study was designed and assessed by someone outside of the group, it comes closer to satisfying the criteria for a school-based field study. Throughout the treatment period, the study was totally implemented by classroom teachers in as natural of a setting as possible, during regular class periods; there was no need for "outsiders" to spend any time in the classroom working with students. Non-selected students in all classes were aware of the project that was being undertaken, and they were generally cooperative and accepting of the procedure.

#### Time Line

a) During late November and early December, 1991, students, parents, and school board members were made aware of the proposed project, and their permission was obtained to allow both teachers and students to contribute to the data collection.

b) During the January/February, 1992, period, units of study were completed, the pre-treatment data was accumulated, and the pretests were written.

c) During the period between mid February and late May, a treatment period was selected by individual teachers for their particular classrooms, encompassing approximately six to eight weeks. It was hoped that this would prove to be a reasonable amount of time for this study.

## Procedures

During the January/February time period the teachers collected samples of all the writing done by the selected students in the subject area chosen. There was no variation in the teaching strategies usually employed during this time; the unit was presented in whatever manner it would 'normally' be taught. Teachers, however, were asked to include two long-answer, higher-level thinking questions on the final unit test, along with the 'usual' objective questions. These long-answer questions were designed by the teachers to represent two types of discipline-specific higher-level questions that the teachers would like to see their students answer more effectively. A copy of this test, written by the selected students, was also saved. These samples were used later to assess the amount of improvement shown by the treatment group; they served as a pretest (see Appendix G).

When the new unit of study was begun, teachers were asked to use a format for teaching this unit that was very similar to the one used during the previous unit, but to substitute some of the treatment group's writing assignments for dialogue journal writing. The treatment group continued to participate in all the teaching/learning activities that the other students experienced, except for this slight variation in the written portion of the classes. Selected students wrote just as much as their counterparts, but their writing took on a dialogue journal focus instead of the more traditional focus which usually included note-taking, answering comprehension questions, and/or 'report-writing'.

Dialogue journal writing involved having the students write a

personal response to what was being studied. Opportunities were provided for students to discuss the material with classmates before, during, or after writing, if the teachers included small group discussions in their teaching 'packages' for the rest of the class as well, but this was not a necessary part of the procedure. The teachers wrote personal responses to the children's writing at the end of each journal writing period. The recommended time for journal writing was about ten minutes at the end of each class period, or twenty minutes every other period, depending upon how the lesson structure worked best for each classroom. The object was not to have structured times assigned by the researcher, but rather to make the experience as natural as possible for both students and teachers.

The teachers were asked to not vary 'regular' teaching strategies and techniques for the 'treatment unit', except for this one slight modification - including dialogue journal writing for the treatment group needed to be accommodated into the 'normal' plan. The best way to fit the journal writing experience into the lesson was determined by the classroom teachers who also needed to plan to spend a few minutes after each journal writing period responding to the journal entries. Again, two long-answer, higher-level thinking questions that were similar in nature to the questions included on the previous test, and representative of the discipline-specific thinking that the teacher was trying to achieve through the journal writing experience, became a part of the test at the end of this unit. It was suggested that at least six to eight weeks would be needed for this 'treatment' to have a significant effect.

At the conclusion of the project, both student participants and teachers were interviewed to determine their feelings about the strategy

being employed. The major focus of this study was to assess individual growth of the treatment group, over time, and both teacher and student opinions about the usefulness of this strategy as a means of improving language, learning, and thinking were sought as part of this assessment.

### Dialogue Journals

During the dialogue journal writing portion of classes, students were encouraged to respond to, reflect upon, and question the information being presented in the unit of study. Suggestions for students included: organizing ideas, articulating the new knowledge 'in their own words', relating the information to personal experiences, reacting to and exploring issues, expressing opinions, challenging the validity of the material being studied, examining consequences and perspectives, and making predictions. Students were encouraged to first respond to the teachers' comments each time, before introducing new information. In this manner, the teachers could personally tutor the children and lead them to reach ever-increasing levels of thinking and understanding.

At the end of each journal writing period, teachers were asked to respond to what the students had written in such a way that they would be encouraging, challenging, guiding, suggesting, promoting inquiry and risk-taking, and questioning content, presentation and style of the writing. Teacher comments were intended to be role models of good writing as well as to be nurturing, tutorial, and persuasive, serving to gently nudge the students to achieve higher levels of thinking and responding. The following list served as a reference and reminder for teachers:

- a) praise good thinking and well-expressed responses as models, and help to identify sections of the journal that the student might wish to share with others;
- b) assist students to reflect more deeply about the topic, and encourage the application of a variety of higher-order thinking strategies;
- c) stimulate divergent thinking beyond the topic being studied;
- d) validate students' thoughts and opinions and ask the right questions to encourage them to rethink or to confirm the positions taken through the development of argumentation skills;
- e) lead students to attempt to construct answers to their own questions and solutions to their own problems;
- f) assist students in examining other viewpoints;
- g) draw attention to the writing strategies that are working effectively for the student, and encourage experimentation with new strategies, including some that are more discipline-specific;
- h) provide for the development of vocabulary by using terminology that will permit comprehension, yet ensure growth as well;
- i) consider each student's individual needs and abilities and give a series of gentle nudges, without pushing so hard that growth is prohibited; and
- j) set yourself up as a role model for the quality of writing and thinking that is expected from the students.

## ASSESSMENT

In my opinion, field studies and action research studies are both invaluable as a means of collecting data to help apply or evaluate existing theories and practices in as natural of a setting as possible. They lend themselves well to local applicability and seem to be effective as a means of improving both school practices and those who improve those practices. Student growth coupled with teacher growth often makes a powerful combination.

A major difficulty experienced with these types of studies, however, is that they often lack a 'research flavour', and therefore the findings are not always taken seriously. I feel that it is necessary for educational research to be more accepting of subjective evaluation strategies - the type which were, of necessity, employed for this study. It is not always either possible, or even advisable to reduce all findings to some sort of measurable, quantifiable number. Since the purpose of this study was to convince teachers that dialogue journals can be used effectively in a classroom setting to improve language, learning, and thinking, it will be necessary to accept the observations and evaluative comments of experienced classroom teachers as acceptable and reliable data. The four teachers taking part in this study have a total of thirty-five years of classroom experience, and almost all of it was at the middle years grade level. I feel that their opinions regarding the applicability of a teaching strategy to a classroom situation are just as valid as a set of empirical, numerical data - perhaps even more valid in the eyes of many educators. Gray (1988) states this idea well when he says, "They [the

teachers] will know what they want students to learn when they ask them to write. They will also know how to judge whether or not students have learned it" (p.733).

Fulwiler (1988) attempted to evaluate writing-across-the-curriculum programs, and found that there was not much hard data on the success or failure of these programs. Reliable assessment instruments have not yet been developed, he says, because the programs are so complex and an evaluation model designed for one program may not work for another, since programs always seem to "grow, evolve, and mutate" (p.62), making baseline data useless. Program designs also vary from one institution to another, making common evaluation studies impossible, he contends, and quantitative measures both difficult to achieve, and only marginally useful. He suggests that methods such as faculty interviews, student evaluations, and journals will serve as an effective means of collecting soft data on improved student writing and learning, but hard data is difficult to obtain because controlling all variables in experiments is almost impossible in these complex, multifaceted programs. Since these programs are usually result-oriented, and the reasons for these results can best be measured subjectively and anecdotally, Fulwiler continues, it is almost impossible to prove the effectiveness of the programs, and the data collected is not acceptable "proof" for many. "Many of the most successful programs promote open-ended rather than fixed-formula pedagogical practice, which again makes efficient, simple data collection and assessment difficult" (p.64). There are usually too many variables and too many possible combinations of learning tasks going on in integrated programs to be able to pinpoint which factors were the ones

that actually made the difference. Perhaps this field will need to be more accepting of anecdotal reports done by students and teachers involved in these programs if any type of assessment is to be undertaken successfully. With these ideas and problems in mind, therefore, the following assessment procedures were employed for this study.

### Data Collection

The following data was collected by the teacher-researchers, to be used for evaluating both this project, and student growth:

1. Copies of all the writing done by the treatment group in the selected content area subject, during the preliminary collection period;
2. Copies of the unit tests written by the treatment group at the end of the pre-treatment period (Appendix G);
3. Copies of the entire journals kept by the treatment group during the treatment period (Appendix F);
4. Copies of the unit tests written by the treatment group at the end of the treatment period (Appendix G);
5. Throughout this study, teachers were asked to record observations which illustrated student attitudes and feelings toward the use of dialogue journals as a teaching/learning strategy (a sample evaluation sheet is included in Appendix A);
6. Evaluations (either written or oral/interview) completed at the end of the project included recommendations from both teachers and students regarding the applicability of this strategy to other classroom situations as well (Appendix H & Appendix I).



## Assessment of Writing and Thinking as Demonstrated in Writing

1. 'Improvements' in writing and thinking as evidenced in dialogue journals were assessed by comparing a sampling of responses taken from the first few journal entries with a sampling taken from later entries (marked with \* and # respectively in Appendix F).

2. The higher-level, long-answer questions from both the pretests and posttests were studied to assess 'improvements' in writing and thinking during a 'test' situation (see Appendix G).

3. 'Improvements' in both journal writing and test writing were judged using the following procedures/measures:

- a) the length of the response - the number of words in the sample responses were counted and recorded;
- b) the amount of information dealt with in the response - the number of different thoughts were counted and recorded (the focus was on number - the quality of the ideas was not important);
- c) the general impression of the overall quality of the written response on both test answers and journal samples was judged by independent markers, using the holistic marking scale included in Appendix C, and an assessment of organization, style, focus, ideas, details, and sentence structure was completed using the analytic scales included in Appendix D;
- d) the comfort-level and self-confidence displayed by the students when a new writing task was begun, and also when the teachers pushed the students to expand their thinking and to respond in writing at a higher-level were also assessed, based upon teacher observations, and responses to the survey or interview questions given to both

students and teachers at the conclusion of the study (see Appendix H & Appendix I).

4. An assessment of the 'growth' of higher-order thinking, as demonstrated in the students' test writing and journal writing samples was measured by independent markers, using the analytic marking scales included in Appendix E.

5. Journal samples were examined, looking for evidence of a variety of specific structures and techniques which students employed when attempting higher-order responses.

#### Assessment of Learning

1. Another focus of this evaluation was an assessment of the individual 'growth' as a learner which could result from this new strategy for interacting with the material to be studied. This individual 'growth' was measured by comparing the students' overall marks on the tests given before treatment and after treatment to see whether there was a substantial change in the ability to recall information and to express the knowledge gained in written form. The objective portion of the tests and the subjective portion of the tests were investigated separately to compare the amount of 'growth' shown for each subsection of the tests.

2. Both teacher and student interviews included questions designed to determine why student marks did or did not improve over the time period in which the treatment was being administered.

### Assessment of Attitudes and Feelings

Both the teachers and the students in the treatment group were asked to respond to a number of survey questions at the end of the study (included in Appendix B) which were designed to elicit anecdotal, evaluative comments from both students and teachers regarding attitudes and feelings about writing-to-learn, the student as a writer and thinker, and the use of dialogue journals as a specific strategy for improving writing, learning, and/or thinking.

## CHAPTER 4

# ASSESSMENT OF DATA

The treatment group used in this study was comprised of eight students - two from each of these classrooms; grade four science, grade five geography, grade seven geography, and grade eight science. This project actually became a series of case studies, as the data that were collected through this dialogue journal writing experience was assessed in an attempt to examine possible improvements in writing, learning, and thinking for the students in the treatment group, over a period of time. Journal entries, pretest and posttest answers, and survey responses collected from the eight students who made up the treatment group and the four classroom teachers who took part in this study, were assessed by a combination of classroom teachers, independent markers, and this researcher. The data were examined in the following manner:

1. A comparison, for both journal writing and test writing, of the average length of responses, and the average amount of information (number of thoughts) per response;
2. An assessment of both journal samples and test samples, by independent markers, to examine 'improvement' in writing, and in thinking as expressed in writing;
3. A comparison of pretest and posttest results, as marked by the classroom teachers, to determine 'growth' in learning and in the ability to express that learning in written form;
4. An examination of journal samples to see which types of higher-

level structures and thinking strategies were employed by the students;

5. An examination of the attitudes, feelings, and recommendations expressed by students and teachers through responses on the surveys.

## NUMBER OF WORDS AND NUMBER OF THOUGHTS PER RESPONSE

Both journal entries and test answers were examined to determine the average number of words and the average number of thoughts expressed per response. The first three journal entries and the last three entries for each student were chosen as measures for the number of words and thoughts expressed. One of the classroom teachers involved in the study assisted the researcher in counting words and thoughts; there was a two person agreement in each case. Thoughts were counted each time the writer appeared to say something different; this is a measure of amount of information or quantity of ideas, not quality of ideas.

Table 1 shows the average number of words found in the first and the last three journal responses for each student, the average number of thoughts found in these same responses, and the difference between the two in each case. Differences expressed as a positive value indicate an increase in the number of words or thoughts per response; differences expressed as a negative value indicate a decrease in the number of words or thoughts per response.

Responses to the pretest and posttest long-answer questions were also assessed for length of response and number of thoughts per response. The results of this assessment are presented in Table 2.

## Journal Writing

An assessment of the journal writing samples is presented in Table 1, which indicates that the average number of words increased by 173 for the total treatment group, from the first three entries to the last three entries. This was an average increase of 21.6 words per entry for each student. Since the first three entries averaged 61.4 words per entry for each student, this is an increase of 35% from the beginning of the journal to the end; a fairly substantial increase in the length of responses. The average number of thoughts expressed in each journal entry increased by 13.9 for the total treatment group. This is an average of 1.7 thoughts per student. Since the average number of thoughts expressed at the beginning of the project was 5.8, this is an increase of 29%; another fairly substantial increase.

Table 1 - average number of words and thoughts per response  
- journal writing

Student	Average #	words	Differ	Average #	Ideas	Differ
	First 3	Last 3		First 3	Last 3	
Gr.4 #1	43	55	+12	3.0	4.3	+1.3
Gr.4 #2	59	55	-4	4.0	7.0	+3.0
Gr.5 #1	50	38	-12	3.3	3.3	0.0
Gr.5 #2	57	75	+18	5.7	7.0	+1.3
Gr.7 #1	78	134	+56	9.0	12.0	+3.0
Gr.7 #2	68	173	+105	7.0	14.7	+7.7
Gr.8 #1	87	83	-4	9.7	7.3	-2.4
Gr.8 #2	49	51	+2	4.7	4.7	0.0

Possible Reasons for the Increases There is no way that anyone can say unequivocally that these increases can be interpreted as improvements caused by this journal writing experience. The number of words and thoughts per journal entry could have been influenced by any number of factors, one of which could be the amount of time allowed for students to complete responses in their journals. There were, undoubtedly, differing amounts of time allowed for individual journal entries from one day to the next, and it is reasonable to assume that occasions when students may not have been given enough time to respond in full to the material they were addressing could have adversely effected the length of some responses. A couple of occasions when this appeared to be happening are suggested by these thoughts which seem to have been cut off in mid stream - "*Although the amount of water.*" was found at the end of the last entry from the student numbered Gr.7 #1, and "*So I do think the goverment should put up the program*" with no final punctuation, may indicate a hasty ending for the last entry for student numbered Gr.8 #1. Since these indications of possible lack of time are found towards the end of the journals however, they would only influence the results further upwards if more time had been provided. Also, with the exception of the grade eight class, there was no indication by either students or teachers that time was a problem for anyone else, and for the grade eight students, the problem seemed to be centered around finding time to do science, rather than running short of time for individual journal entries. It appears, therefore, that time was not a factor which adversely affected the results in any significant way.

Another factor to consider is that students may have been taking the

project more seriously as time went on, although there was no indication that there was any noticeable change in attitude. Teachers reported that the students appeared to be highly motivated from the beginning, and this enthusiasm continued throughout the project for most students. Even a student who was frustrated by the experience, Gr.7 #2, continued to show increases in length and quality of responses that were surprising. Her responses could have been expected to deteriorate as time went on due to her frustration, but the opposite result was noted, with increases measured in both the length of response and the number of thoughts per response. Attitude, therefore, does not seem to have been a determining factor either.

It is also possible that the material being studied may have been more conducive to discussion during the latter part of the unit, and the types of responses being requested by the teachers, or being initiated by the students later in the study may have been ones that required more extensive responses than those being requested or initiated earlier in the project. However, this does not appear to be true throughout this study. The fact that several students ignored questions asked by teachers in their prompts throughout the study tends to indicate that more extensive responses were being sought by teachers, but they were not always being provided by students. If they had been, the results would have been even more positively affected.

It was interesting to note that two students, Gr.4 #2 and Gr.5 #1, were providing journal responses that were more focused and concise, as evidenced by the fact that the average number of words per entry decreased by 4 for Gr.4 #2, while the average number of thoughts increased by 3;



whereas the average number of thoughts for Gr.5 #1 remained constant, but the average length of entries decreased by 12 words. The ability to say more in fewer words is certainly a valuable skill to promote for middle years students, and these data suggest that this growth could be happening as a result of journal writing.

Although six out of eight students showed some measure of growth in at least one of these two areas, it should be noted that Gr.7 #2 displayed impressive growth, over such a short period of time, in both the number of words and the number of thoughts per response. The only student who appeared to be negatively impacted in this area of assessment was Gr.8 #1, who showed a decrease of 2.4 ideas per response. The reason for this decrease remains unknown.

Although there could have been a number of factors influencing the results of this assessment, for most students there did appear to be an increase in both the length and the intensity of responses in journal entries as the dialogue journal writing experience progressed. There was also some indication, in student surveys, that students may have felt more comfortable in their responses at the end of the unit than they did at the beginning. Most students attributed this increased comfort level to the journal writing experience.

### Test Writing

Table 2 depicts the results of the assessment of the responses to the pretest and posttest long-answer questions for the students in the treatment group. It shows that the average length of responses on the tests increased by 115.8 words per response from the pretests to the

posttests, for the total treatment group. This was an average increase of 14.5 words per response per student. Since the average number of words per response on the pretest was 36.9 for each student, this is a 39% increase. The average increase in the number of thoughts or ideas per response on the tests was 10.5 for the total treatment group. This was an average increase of 1.3 ideas per response per student. Based on an average of 3.1 thoughts per response on the pretest, this is a 42% increase. Both of these appear to be fairly substantial increases also.

Table 2 - average number of words and thoughts per response  
- test writing

Student	Average #	Words	Differ	Average #	Ideas	Differ
	Pretest	Post-test		Pretest	Post-test	
Gr.4 #1	28	25.5	-2.5	1.0	2.0	+1.0
Gr.4 #2	28.5	49	+20.5	2.0	4.0	+2.0
Gr.5 #1	28	59.5	+31.5	3.5	4.5	+1.0
Gr.5 #2	50.5	51.5	+1.0	3.5	4.0	+0.5
Gr.7 #1	53.5	80.5	+27.0	5.0	7.0	+2.0
Gr.7 #2	89	52.5	-36.5	7.5	4.5	-3.0
Gr.8 #1	7	50	+43	1.0	4.7	+3.7
Gr.8 #2	10.5	42.3	+31.8	1.0	4.3	+3.3

Possible Reasons for the Increases These increases in both the number of words and the number of thoughts per long-answer response to test questions could have resulted from a variety of factors as well. The concepts in the second unit being studied may have been easier, or more interesting for the students. Students may have spent more time studying, or put more of an effort into the second unit than into the first. Or,

the questions on the second test may just have been easier. There is some evidence to suggest that that was so for the grade eight test; both grade eight students failed to respond to the second long-answer question on the pretest. However, one of the students, (Grade 7 #2) felt that the second unit was considerably harder, and both the number of words and the number of thoughts per response dropped dramatically for her (-36.5 words and -3.0 ideas respectively). This contributed to bringing the overall increase down considerably. No one reported spending more time studying, and teachers indicated that they believed that students' attitudes remained consistent throughout the study, so lack of effort was probably not an important factor.

Responses from the students on their surveys, which will be presented later, seemed to indicate that the students generally felt more comfortable with the second set of test questions, after the dialogue journal experience, than they had with the questions before it. It is possible, therefore, that students may have attacked the posttest questions with a great deal more confidence as a result of this project. The improvements presented could also reflect an improvement in the students' ability to respond in writing to long-answer test questions, as a result of the practice they had responding to similar questions in their journals, as indicated by a couple of students in their survey responses.

It was interesting to see that the number of thoughts presented in students' responses to long-answer questions on the tests showed an increase for seven out of eight students; four of these students displayed substantial increases of between +2.0 and +3.7 thoughts per response. For the student identified as Gr.7 #2, however, the decrease in both the

number of words and the number of thoughts was perplexing. This is the same student who displayed the dramatic increases for journal writing as noted in Table 1. Her journal was filled with clarification questions and requests for more information. Teacher responses to her were patient and elaborate, providing both the information and the clarification that was being sought, yet all of this seemed to influence her test results downward rather than upward as would be predicted. During an interview, this student stated that she found change difficult, and she did not think this new way of doing things was helping her at all. She clung to the fact that she liked to study from definitions better than from journal notes. Perhaps she is just a student who is a "memorizer" rather than a "thinker" at this point, and who unconsciously balks at new ways of doing things. I feel that it would be exciting to try another unit of this type with her and compare the results after she has had more time to become accustomed to this strategy.

### **EVALUATION OF JOURNAL SAMPLES AND TEST RESPONSES - BY INDEPENDENT MARKERS**

Three people who were not directly involved with the students working on the project were chosen as independent markers to help assess the writing and the thinking as demonstrated in writing, for both journal entries and test responses. These independent markers included the writer of this thesis, a staff member at the University of Manitoba, and a resource teacher who was not familiar with the project, at the school where the investigation took place.

A collection of samples taken from among early journal entries

(those marked with an \* in Appendix F) and samples taken from later journal entries (those marked with a # in Appendix F) were presented to the independent markers, in random order. These collections were identified only by grade level (eg. Gr.4 #1; Gr.4 #2; Gr.4 #3; Gr.4 #4). The three independent markers were asked to apply the general impression marking scale (Appendix C) and the analytic marking scales to assess writing (Appendix D), as well as the analytic marking scales to assess thinking as demonstrated in writing (Appendix E) to each collection. Marks given were recorded on a tally sheet as presented in Appendix J.

Since there was no communication among the independent markers regarding what the expectations would be for each grade level, and since each marker came to the assessment task with a separate set of experiences with children and with different preconceived journal writing models in mind, there was sometimes quite a range among the three marks for each category (ie. from a mark of 2-below average to a mark of 5-above average); at other times the marks were very close. To compensate for these differences, the three tallies were averaged, rounded to the nearest tenth, and recorded on a master tally sheet.

The first seven marks, the general impression marks and the analytic scores to assess writing, were then totalled, averaged, and rounded to the nearest tenth for each student being assessed. The results of this averaging for both early writing samples and later writing samples are presented in Table 3 as "writing scores". The bottom four sections of the tally sheet, the results of the analytic scales to assess thinking, were also totalled, averaged, rounded, and presented in Table 3 as "thinking scores".

Table 3 - evaluation of journal writing - independent markers

STUDENT	WRITING		DIFFER	THINKING		DIFFER
	EARLY	LATE		EARLY	LATE	
Gr 4-#1	2.7	3.3	+0.6	2.6	3.4	+0.8
4-#2	3.9	3.5	-0.4	4.4	3.5	-0.9
Gr 5-#1	3.0	2.7	-0.3	3.3	2.7	-0.6
5-#2	3.7	4.5	+0.8	3.6	4.2	+0.6
Gr 7-#1	5.1	5.1	0.0	5.2	5.2	0.0
7-#2	3.3	3.6	+0.3	3.6	3.7	+0.1
Gr 8-#1	2.3	3.1	+0.8	2.1	2.6	+0.5
8-#2	3.1	3.7	+0.6	2.9	3.5	+0.6

### Journal Writing

Both writing and thinking scores improved somewhat for the journal writing for five students, remained constant for one, and dropped slightly for two students. None of the differences were particularly dramatic, although three students did show a reasonable increase in either writing or thinking scores (+0.8), and one showed a decrease in thinking that was also fairly substantial (-0.9). The average writing increase was only +0.3, or 9% based on an early average score of 3.4, and the average thinking increase was only +0.1, or 3% based on an early average score of 3.5 for the treatment group. It was interesting to note that there was a close correspondence between scores for writing and scores for thinking for each student; they were either both up slightly, both down slightly, or both remained fairly constant.

## Test Writing

A similar assessment procedure was followed with student responses to long-answer test questions. Pretest and posttest responses for each grade level were presented to the independent markers randomly, and scores were assessed, averaged, rounded, and recorded as had been done for the journal samples. The results of this evaluation of test writing are presented in Table 4.

Table 4 - evaluation of test writing - independent markers

<u>STUDENT</u>	<u>WRITING</u>	<u>WRITING</u>	<u>DIFFER</u>	<u>THINKING</u>	<u>THINKING</u>	<u>DIFFER</u>
	<u>PRETEST</u>	<u>POST- TEST</u>		<u>PRETEST</u>	<u>POSTTEST</u>	
Gr 4-#1	2.1	2.8	+0.7	2.2	2.9	+0.7
4-#2	3.1	4.6	+1.5	2.8	4.8	+2.0
Gr 5-#1	2.5	3.6	+1.1	2.2	4.3	+2.1
5-#2	3.2	3.9	+0.7	3.0	3.4	+0.4
Gr 7-#1	3.6	4.3	+0.7	3.9	4.7	+0.8
7-#2	3.6	2.7	-0.9	3.3	2.8	-0.5
Gr 8-#1	1.0	4.0	+3.0	1.0	3.7	+2.7
8-#2	1.0	3.8	+2.8	1.0	3.5	+2.5

The writing assessment for these test samples showed three students with an increase of +0.7, and four students who showed more impressive increases of between +1.1 and +3.0. The average increase on the test writing for the treatment group, was +1.2 - an increase of 48% over the original pretest average of 2.5.

Thinking scores also improved, with four students' increases ranging between +2.1 and +2.7. The average increase in thinking scores for the

treatment group totalled +1.3, a 54% increase over the average pretest score of 2.4.

Interestingly, the student identified as Gr.7 #2 again showed a decrease in both writing and thinking during test situations (-0.9 and -0.5 respectively). This student later commented that she found the content of this second unit very difficult, a possible reason for these declining scores. The final overall results were also influenced greatly by the fact that the two grade eight students failed to respond to one of the two questions on the pretest. This fact, coupled with the inadequate responses to the question they did attempt, made it impossible to assess any pretest scores above a 1.0 for either of them. Their dramatic improvements also contributed greatly to the overall average increases.

Possible Reasons for the Increases Again, the dramatic improvement noted in assessment of writing and thinking in a test situation could be attributed to a number of factors - length of time the students studied, difficulty of test questions, attitudes, time of day, or the mood of the students. None of these factors, however, were particularly obvious for any of the students except the one identified as Gr.7 #2; she did express frustration with the unit as a whole, saying that she found it much harder than usual. It appears that this journal writing experience may have been somewhat confusing for her.

However, since neither the rest of the students nor the teachers reported any other noticeable factors which appeared to influence the results, and since most of the students and teachers did respond positively when asked if they felt this dialogue journal writing



experience had any effect on the writing, learning, or thinking abilities of the students, it seems highly possible that the limited amount of time spent writing in the journals, practising long-answer responses, may have had a positive effect on the quality of responses made by students on test questions.

## TEST RESULTS - AS GRADED BY THE CLASSROOM TEACHER

Both the short-answer and the long-answer test questions of the pretest and the posttest were graded by the classroom teachers in the manner in which it was usually done in each class. The marks assessed for each student were then recorded and compared in Tables 5 and 6.

### Short-Answer Questions

Table 5 shows the students' marks for the short-answer questions on both the pretest and the posttest as they were graded by the classroom teachers. These marks are recorded as a raw score and as a percentage for each test. Since the total number of marks allocated for the short-answer and the long-answer components of each test were not the same, the difference, expressed as a positive or negative value for each set of tests, is recorded in Table 5 as a percentage, to allow ease of comparison.

Three out of eight students' marks on the short-answer questions of the posttest were higher than on the pretest, with a range of +6% to +22% (average of +12%); five out of eight students' marks on the posttest were

lower than on the pretest, with a range of -3% to -57% (average of -19%). The overall difference between the tests for the total treatment group was an average of -7.6% on the short-answer portion of the tests.

Table 5 - test results - short-answer questions

STUDENT	PRETEST	PRETEST	POSTTEST	POSTTEST	DIFFERENCE
	MARK	%	MARK	%	%
Gr 4 - #1	24/28	86%	23/25	92%	+06%
Gr 4 - #2	26/28	93%	21/25	84%	-09%
Gr 5 - #1	19/19	100%	26/27	96%	-04%
Gr 5 - #2	19/19	100%	20.5/27	76%	-24%
Gr 7 - #1	24.5/26	94%	24.5/27	91%	-03%
Gr 7 - #2	24.5/26	94%	10/27	37%	-57%
Gr 8 - #1	25/29	86%	22.5/24	94%	+08%
Gr 8 - #2	15/24	63%	20.5/24	85%	+22%

Although most marks did not change considerably, students' marks on the short-answer questions generally went down more than anticipated. Only three students showed a substantial difference on the short-answer questions (greater than +/-10%) - Gr.8 #2 improved greatly, and Gr.5 #2 and Gr.7 #2 both displayed dramatic decreases. One student (Gr.7 #2) continued to have great difficulty with the content of the chapter and influenced the average mark greatly (-57%). It appears, therefore, that students had varying degrees of success with retaining facts throughout this dialogue journal writing experience, and that dialogue journal writing may not have a positive effect on the kind of questions generally asked on the short-answer section of content area tests.

### Long-Answer Questions

The marks awarded by the classroom teachers for the long-answer portion of the tests are presented in Table 6. Only one student's mark went down on the long-answer questions (-7%). The marks of the other seven students went up between +13% and +58% (an average of +33%). The overall difference in long-answer questions for the total treatment group was an average increase of +28%.

Table 6 - test results - long-answer questions

<u>STUDENT</u>	<u>PRETEST</u>	<u>PRETEST</u>	<u>POSTTEST</u>	<u>POSTTEST</u>	<u>DIFFERENCE</u>
	<u>MARK</u>	<u>%</u>	<u>MARK</u>	<u>%</u>	<u>%</u>
Gr 4 - #1	4/6	67%	6/10	60%	-07%
Gr 4 - #2	4/6	67%	9/10	90%	+23%
Gr 5 - #1	7/11	64%	7/8	88%	+24%
Gr 5 - #2	6/11	55%	7/8	88%	+33%
Gr 7 - #1	4.3/6	72%	5.5/6	92%	+20%
Gr 7 - #2	3.1/6	52%	3.9/6	65%	+13%
Gr 8 - #1	1/4	25%	7.5/9	83%	+58%
Gr 8 - #2	1/4	25%	7.5/9	83%	+58%

This increase in scores for long-answer test questions was consistent with the increase noted by independent markers when they applied the analytic scales to these same long-answer test responses. Although the actual increases were not as dramatic this time, they can still be considered to be substantial increases, and they lend support to the notion that this journal writing strategy seems to have had a positive impact on students' scores when responding to higher-level test questions.

### Overall Test Results

As shown in Table 7, only two out of eight students showed improvements of more than +10% on the overall test results (+12% and +28%). There was little difference, not more than +/-10%, on the overall test results for five out of eight of the students, although all of these five students showed improvement on the long-answer portion of their tests. Their overall marks ranged between +7% and -4%, with an average of +0.6%. Again, one student continued to experience some difficulty throughout the project, and her overall test mark was down 44% on the posttest, although the long-answer portion of her test was up 13%. This student reported that the content of this chapter was harder to understand and that she preferred "copied" definitions to study from. It is unknown what effect the dialogue journal writing experience had on the overall results for this student.

Table 7 - overall test results

STUDENT	PRETEST	PRETEST	POSTTEST	POSTTEST	DIFFERENCE
	MARK	%	MARK	%	%
Gr 4 - #1	28/34	82%	29/35	83%	+01%
Gr 4 - #2	30/34	88%	30/35	86%	-02%
Gr 5 - #1	26/30	87%	33/35	94%	+07%
Gr 5 - #2	25/30	83%	27.5/35	79%	-04%
Gr 7 - #1	28.8/32	90%	30/33	91%	+01%
Gr 7 - #2	27.6/32	86%	13.9/33	42%	-44%
Gr 8 - #1	26/33	79%	30/33	91%	+12%
Gr 8 - #2	16/28	57%	28/33	85%	+28%

It should be noted that, since the long-answer questions comprised only a small proportion of the total test marks, the substantial increases shown there were not reflected in the overall results, because many students displayed decreases in marks earned for short-answer questions which comprised the greater portion of each test. Although two students improved their overall marks considerably, and one showed a dramatic decline in total marks, the difference in overall test results from pretest to posttest for the treatment group was actually 0%. It appears that, although most students' overall marks were not significantly affected by this dialogue journal writing strategy, journal writing seems to affect responses to short- and long-answer test questions differently, with a positive effect on long-answer responses, and a negative effect on short-answer questions.

## EXAMINATION OF JOURNAL SAMPLES FOR SPECIFIC STRUCTURES AND STRATEGIES

### Attempts to Employ Higher-Level Thinking Strategies

A number of different structures and strategies were employed by the students in their dialogue journals as they attempted to respond to what was happening in their classrooms and to address questions and prompts posed by their teachers. These structures and strategies illustrate attempts by the students to engage in higher-levels of thinking, and to express these higher-level thoughts in writing.

Clarification In many of their journal entries, students appeared to be attempting to make sense of terms and processes, and to clarify concepts and ideas. These examples show students initiating an interaction with the teacher to try to sort out and make sense of the information they encountered:

- *"You have to think about structures first because you have to think about how your going to make it and with what" (Gr.4 #1);*
- *"Do you think people in the north are scared to move in southern Canada because they were born in the north?" (Gr.5 #1);*
- *"I wonder how they know where nickel or iron is?? How hot do you think they would have to heat the furnuse to melt the metals?? ...Why does water always do this?" (Gr.5 #2);*
- *"Is that right? ...What do these words mean? ...I still don't get what cloves are. Can you explain? ...What do they mean that the world is just 15 centimeters from starvation?" (Gr.7 #2).*

There were also further attempts at categorizing and organizing the learning in order to have concepts make more sense:

- *"Is the effects of heat exp. the one we just did" (Gr.8 #1);*
- *"This chapter, is it only going to be about resourses of the earth?" (Gr.7 #2).*

Another strategy employed by students attempting to understand the material they were studying involved trying to sequence and/or describe processes in a logical way:

- *"First you need to... Then you should... Then after you know all that..." (Gr.4 #2);*
- *"Dam - in a stream or river, water rushes through the dam runs the water turns the generator, which makes electricity that runs thorough hydro wires" (Gr.8 #1).*

Evaluation Several students' responses showed signs of higher-level thinking when they contained judgements and/or evaluative statements. Some of these comments referred to the students' own feelings about the difficulty level of the material being studied:

- "Well this question is hard to answer but..." (Gr.4 #1);
- "because they are more important... [and] Don't you think people who worked with cutting down tree's wish they could use the tools lumber people use now" (Gr.5 #1);
- "Teacher X, Please don't give me such hard questions" (Gr.8 #1);
- "That's a tough question to answer. I don't know if I can answer that... [and] then I wouldn't like it..." (Gr.5 #2);
- "I would hate it... [and] I wouldn't like to live way up north" (Gr.5 #1).

Justification of Opinions Although most students did not do a particularly good job of discussing different perspectives, some did attempt to take a stand on an issue:

- "The lumbering industry should leave the rainforests alone and create a designated area to plant new trees... [and] People have to start managing some of the nonrenewable resources..." (Gr.7 #1);

and some made a sincere effort to justify their personal opinions:

- "I think the goverment should put up a program to encourage people to put in solar power because..." (Gr.8 #1);
- "Yes, I do because fossil fuels are almost gone already... [and] It will probably be solar energy because..." (Gr.8 #2);
- "I would not want to live way up there because..." (Gr. 5 #2).

Relating Personal Feelings Although the journal entries were generally not as "chatty" as I expected them to be, some students did share statements of personal feelings about what they were learning:

- "I thought it was interesting that... I often think how great it would be if I would invent a vehicle that ran on water... It's really amazing how..." (Gr.7 #1);
- "Why do we have to learn about this stuff? What is it going to help us in later on life?" (Gr.7 #2);
- "I don't know. I don't know anything about a solar home..." (Gr.8 #1);
- "...I think people might wonder why we live here but if they do why should they, Plum Coulee is a good place to live..." (Gr.5 #1);
- "By the way I've been noticing that you've been making sience more interesting." (Gr.4 #2).

One student asked questions relating to the personal feelings and/or experiences of the teacher:

- "would you like to work in a mine like underground don't you think it would be scary? ...Would you like to live way up north?" (Gr.5 #1).

and one student even shared personal feelings and/or concerns that had nothing to do with the material that was being studied:

- "I was thinking about what my grandma and grandpa were doing in Brownsville Texas" (Gr.4 #2).

Restating Knowledge Almost all students experimented with rehearsing thoughts and articulating new knowledge in their own words. Here are a few examples:

- "...it [water] goes in a giant cycle. If you water your garden it helps the plants grow. Then the water evaporates to be used again" (Gr.7 #1);

- "There were animals in the north and when they died, their bones were buried under the earth. After thousand of years their bones turned into oil and gas" (Gr.5 #2);

- "When water turns a water mill, it produces electricity for the generator in a hydro plant. Solar power is another form of energy using light to make electricity." (Gr.8 #2).

Some students even attempted to construct answers to their own questions:

- "What would happen if all the trees were cut down?? ...If all the trees were cut down we would breath in carbondioxide, because the trees exchange carbondioxide for oxygen" (Gr.5 #2);

- "What do they mean that the world is just 15 centimeters from starvation? Does it mean that if we would'nt have rain for quite some time, then all our crops would die? If we would not have rain? Lets say, for 3 straight months it would be very hot outside what would happen? Would our soil dye out? If the soil would die out would the whole world die? as in us? I think that most things and people would die because we would not have any crops and then we would die of starvation. Would'nt we?" (Gr. 7 #2).

Relating New Knowledge to Previous Knowledge and Predicting As expected, there was evidence of students attempting to personalize their newly acquired knowledge, and relate what was being learned to previous knowledge:



- "People in the north, must be sort of like the people we saw in the movie. They probably are like the Japanese. [and] I always thought that they mine big chunks of nickel and iron." (Gr. 5#2);
- "I don't know if there is a connection between the exp. and the things I wrote on Feb. 3. Well would the tap be an example? The water rises into tap then goes into the sick or does it happen it a different way" (Gr.8 #1);

as well as making predictions based upon an understanding of the circumstances, and the students' own past experiences:

- "If the gas were to run out, No one would be able to...." (Gr.7 #1);
- "...in the future, they could have plastic bubbles over towns so that all year round they can have warm climates and grow crops under the bubble. Maybe some of the food will be made by some chemicals." (Gr.5 #2);
- "...after they are completely gone the world will have to switch over to a different fuel, which will be water, hydrogen, or solar power. It will probably be solar energy because scientists have not, as far as I know, come up with a way to heat a home with the other two. (Water and Hydrogen)" (Gr.8 #2).

Elaboration Students made valiant attempts to elaborate and provide proper explanations, but some experienced real difficulty in this area.

Here are two explanations attempted by a grade four student:

"...M wanted it different but me and E wanted it even differently. So me and E started doing it the way we wanted it. So M agreed with us ...and that's that;  
 "...first we did something and it just wanted to fall down but E thought of a way it could work and that's how it worked"  
 (Gr.4 #1).

There appears to be an obvious weakness in providing explanations here, but the attempts initiated would provide the basis for learning. This grade five student also leaves us wondering when he says:

"...Plum Coulee is a good place to live I think maybe other people don't." (Gr.5 #1).

"Don't what?" we immediately ask. Although this grade five student displayed some difficulty expressing his thinking when responding to

teacher prompts in some earlier responses, he made several attempts which were to be the basis for improvement as the study progressed:

Q: "Why do you think the pay is so good for most jobs in the north?" A: "Well because their's mining up north and for mining you get pretty good money." [and]

Q: "Why would a teacher or nurse make more money at their job in the north than in southern Canada?"

A: "Well maybe because they are more important like teachers for kids and nurses for any people." (Gr.5 #1).

There was evidence of more improvement in answering questions during later entries. Responses were still short, but at least they were somewhat focused and there was more evidence of thought:

Q: "Who would think of these new inventions."

A: "The people who invented these tools would have to think how they could make tools that would make the job easier." [and]

Q: "A lot of oil + gas have been found in the north, how do you think it got there?"

A: "The animals died and the bones after a while it turnes to oil and gas." (Gr.5 #1).

#### Increased Awareness of Thinking - Metacognition

As students dialogue with teachers, and as they are gently nudged towards increased levels of thinking and responding, students tend to become more aware of themselves as thinkers. They begin to realize their limitations as well as their strengths, and to actively seek out and experiment with specific approaches to thinking.

Using Humor Although this strategy was not used as frequently as I expected, especially among junior high students, some attempts were made to use humor and/or sarcasm:

- "Well really I was thinking about how it would look, and how I would make it, and also what I would use to make it. Why? [and] I'm going to check the brige. Why? To make sure it's safe. No really, I would check to make sure..." (Gr.4 #2);

- "Wow, I can't beleive I wrote all this" (Gr.8 #1);

- "There weren't many problems in our group. Except that we poked our finger with the pins..." (Gr.4 #2);

and one student even offered an apology later:

- "I'm really sorry for all the rudeness I've done" (Gr.4 #2).

Questioning and Pursuing Knowledge Students also asked a lot of questions in their pursuit of knowledge. The student identified as Gr.7 #2 seemed to be very confused, and constantly in need of clarification; her responses contained very little other than questions. Here is a sampling of some of the knowledge questions asked by other students who appeared to be quite aware of their own limitations:

- "How do you think the people ...found out that there was a lot of good mining up North. Why do you think Inuits still live up there, because they could have better houses down here and it's not so cold" (Gr.5 #1);

- "Why didn't they make a border of the north? Would the whole mine cave in? I wonder how they know where nickel or iron is?? How hot do you think they would have to heat the furnace to melt the metals??" (Gr.5 #2);

- "Does electricity harm the ozone layer? ...Doesn't it take energy to bring water up? ...is there a battery that stores the energy (heat energy) from the sun?" (Gr.8 #1).

Responding to Teacher Prompts Although most students were quite conscientious about answering questions posed by the teachers in their responses to student journal entries, some students tended to ignore many of the questions asked by the teachers. One Grade four student attempted to answer most questions, but had a tendency to focus only on the last question when more than one was asked:

Q: "How do you know how to design something if you don't know what it will be used for? What do you need to know before you design a structure?"

Only the second question received a response:

R: "You first have to know what the object is used for and next you have to know what the material is strong."

A similar thing happened with this response:

*Q: "When we talked about structure and function, did you have any idea how they could be related to animals? How do you think structure and function relate to you as a person?"*

*R: "Well this question is hard to answer but what I think, a person has strong muscles to move its head, arms, legs and all sorts of other things that muscles are good for" (Gr.4 #1).*

Other students also had a tendency to ignore teachers' questions; Gr.5 #1, Gr.7 #1, and Gr.8 #2 all failed to acknowledge questions on a couple of occasions. Although it is unknown why they failed to respond to teacher questions, it appeared as though these students may have been avoiding the work of thinking through the questions and formulating responses. It is possible that they may also have not read carefully, lacked confidence to respond to the questions they ignored, or they may have answered the first questions in their minds, and failed to realize that they had not written a response to it. This may also be an indication of students who had not yet reached a developmental stage which would allow them to handle the shift in thinking required to respond to multiple prompts. There is no concrete evidence to suggest why some of the questions were ignored.

**"Taking Risks"** It also appeared that some students were still 'hung up on the right answers' and felt uncomfortable taking a risk and expressing their own opinions. The following examples tend to show kids becoming more conscious of the limitations in their thinking abilities:

- *"That's a tough question to answer. I don't know if I can answer that. I guess they wouldn't always make open-pit mining because if they would go around a piece of earth not ore and broke loose. I tried but that's probably not the one your looking for." (Gr.5 #2);*

- *"The bridge contracts in winter and expands in summer. The builders leave some room for the bridge to expand so it doesn't fall apart?? Explain to me a little more I don't get it." (gr.8 #1);*

- *"My answer is so that the world is not the same all around*

*us and that we know how to prepare ourselves. Is that right?"*  
(Gr.7 #2).

One wonders, however, if these problems would have persisted very long if the project could have continued longer, enabling students to gain more confidence, and to get more experience at attempting new things.

### SUMMARY

This examination of the strategies and structures being employed by the students in their dialogue journals shows a wide range of successes in responding to both science and social studies content, as well as a variety of levels of awareness of students' strengths and limitations. Although some growth was certainly evident for most students, it was also obvious that a great deal still remained to be accomplished before these students would achieve their potential for higher-order responses. Although there was not as much noticeable growth as I had predicted, there was certainly evidence within the journal responses that most students were beginning to stretch and extend their thinking into the realm of higher-order thoughts.

## RESULTS OF SURVEYS

### Student Surveys

Students generally responded very maturely to the survey questions. Teachers reported that students spent time thinking and took the survey seriously. A summary of some of their most pertinent responses follows;

total responses to the survey questions can be found in Appendix H.

The questions on the student survey were designed to find out how the students viewed themselves as writers, learners, and thinkers, to find out whether or not they felt that there had been improvement in any of these areas throughout the journal writing experience, and to find out to what the students attributed their growth, or lack of it.

Students as Writers Two of the students felt they were not good writers, and their feelings did not change throughout the project. One of them experienced a great deal of difficulty with the entire unit and commented, *"I don't think it helped me because I did not understand most of it"* (Gr.7 #2); the other was in a class who had not spent much time writing in their journals because of a variety of interruptions and external interferences in the time schedule. This student reported, *"I still can't put the right words on paper without messing up the whole piece of writing. But this writing did help me be a little neater. I guess we didn't write as much as we should have"* (Gr.8 #1). Only one other student reported seeing no personal growth as a writer. This student felt fairly confident about his writing ability, and reported *"I feel that my writing is a little over average. This project has not made any effect on my writing. To me journal writing is not much different than any other writing, I also keep my own Journal at home"* (Gr.7 #1).

Five out of the eight students reported growth as writers. Their comments included: *"I think by journal writing I've become away better writer"* (Gr.4 #1); *"I now feel like a more interesting writer ...it has helped by making me think about what I write and if it makes scense. I also think I am more into writing now"* (Gr.4 #2); *"...I could talk through*

writing and you can learn that way" (Gr.5 #1); "It sort of helped me because I could never express my words in writing before" (Gr.5 #2); and "This journal dialogue has helped me because of the neatness that my writing has improved to ...I think I will start writing a little more" (Gr.8 #2).

Students as Learners Only one student's mark went up considerably on the short-answer test questions after the project. This student commented, "Probably I knew it from studying. We did focus on those things in the journal" (Gr.8 #1). Two students' marks went down noticeably on these short-answer questions. Their comments included, "No. [This indication that the mark did not go down was not correct; it actually went down approximately 24%.] I find that short answer questions go faster because sometimes they are really easy" (Gr.5 #2); and "I did not understand all of the long answers that we have to write, and I'm not a creative writer. I also didn't have facts to look at, just my questions and answers" (Gr.7 #2).

The marks for the other five students all stayed within the +/-10% range (see table 5). Three of them credited journal writing with maintaining their mark, with comments such as: "I started thinking more about the subject in April" (Gr.4 #2); and "We did focus on those things in the journal" (Gr.5 #2) [This is the student whose mark actually went down; there was obviously some confusion here]. One student felt that his mark went down a little because "I didn't have as many notes in April" (Gr.5 #1); one stated that "Studying the journal entries compared to notes, there is not too much of a difference between them" (Gr.7 #1); and one student felt there was a slight difference for him because "there were

more questions on the more recent test" (Gr.8 #2). The comments surrounding the effects of the journal writing experience on short-answer test questions were generally quite guarded.

Long-answer Test Questions Three of the students reported that their feelings towards long-answer test questions hadn't really changed. They said: "I don't think it made any difference" (Gr.4 #1); "I didn't like long answer questions in January and don't now because I always feel something's wrong with it and I hate it when I can't think of enough to say" (Gr.4 #2) [This student's long-answer mark actually went up 23%]; and "It did not make a difference to me, I still find long answer questions a little more diffecult" (Gr.7 #1) [This student's mark went up 20%].

Three students reported feeling more comfortable with the long-answer questions. They made comments such as: "I felt like I knew the answers almost right away. All the questions were answered in my journal" (Gr.8 #1); and "I found them easier to do because I had that dialogue wrighting. I new the material because of the journal" (Gr.8 #2) [Both of these students' marks were up 58%]. Some comments were more guarded: "as soon as he handed me the test and I read the question, I knew I was going to get a bad mark because of the way we had to take a side it was sort of scary" (Gr.5 #2) [This mark actually went up 33%]; and "it was on a different chapter which was harder" (Gr.7 #2) [This mark was up 13%].

It appeared that, although great improvement was shown in the actual marks, most students had not yet done enough dialogue journal writing to perceive that dialogue journals had a real impact on their confidence in their ability to handle these questions comfortably. For some students, a 'mental block' still definitely seemed to be there when long-answer



questions were encountered.

Seven of the marks on the long-answer questions actually went up more than 10% from pretest to posttest, (see table 6) and one remained fairly close (-7%). Six students attributed their actual success to the journal writing experience, in one way or another. They made comments such as: *"I can learn more in journal writing than in just plain science"* (Gr.4 #1); *"I have learned to think more about it before I go and write it on the paper"* (Gr.4 #2); *"all the questions were answered in my journal, so I knew the answer"* (Gr.8 #1); and *"the dialogue journal writing ...helped me to study"* (Gr.8 #2). One student thought his success could be because *"maybe the question was easier in April then in January"* (Gr.5 #1) and one reported still having trouble making or taking a side, although his mark was up 33%. One grade seven student reported *"I found both of the long answer questions had the same amount of difficulty"* (Gr.7 #1); the other one said *"the questions were harder on the second test and that I was worried more"* (Gr.7 #2).

Most of the students felt that dialogue journal writing affected the way they learned content material. They commented: *"It helped me understand what I was working on. I feel this because I realized it during this unit and have prove in my brain that it helped"* (Gr.4 #2); *"it's a good way to learn and a fun way to learn"* (Gr.5 #1); *"I like the idea of doing your own research by yourself"* (Gr.5 #2); *"I sort-of understood more stuff than the others in my class. Well I asked questions in my journal and they were questions that weren't studied in class"* (Gr.8 #1); and *"Yes, very much so because whenever I wrote something it stayed in my head because I had to think to get my answer to write in the journal"*

but when I study for a test the things I study go right through my head" (Gr.8 #2). One student reported little, if any, effect, and one did not learn nearly as much, claiming, "I like definitions better" (Gr.7 #2).

Students as Thinkers Almost all students reported some growth as a thinker and/or as a questioner. Their comments included: "I felt a change in my body when I was answering these thinking questions" (Gr.4 #1); "this Journal writing has got me thinking alot more" (Gr.4 #2); "it might of made me think when I was writing in my dialogue journal" (Gr.5 #1); "I felt more like a "questioner" more than a "thinker""(Gr.5 #2); "I think that I think a little more before writing a question down than I did before" (Gr.7 #1); "I guess I could think a little better and was able to ask more questions than I could before" (Gr.8 #1); and "I could come up with the answers easier because whenever I wrote something down in the journal it was easier to remember because I had to come up with what I had wrote down" (Gr.8 #2).

Suggestions and Recommendations The last questions on the survey were designed to have the students make suggestions and recommendations about dialogue journal writing as a strategy for learning and thinking. Seven out of eight students recommended dialogue journal writing as a useful strategy to promote thinking and learning; one student did not recommend journal writing. One student stated, "it helps you to become a better writer than you maybe are and it also makes you think alot more" (Gr.5 #2); another reported "it does help you with your subject and all your questions are answered" (Gr.8 #1); and a third suggested, "It helped me in two out of three areas in school and so I think that students who are having trouble studing for tests should use this method" (Gr.8 #2). It

was further recommended by students as a strategy that could be useful in areas beyond Science and Social Studies. Suggestions included: for students who have trouble studying for tests, for homeschoolers, for band, for gym, for Math, for getting people interested in others at school, for getting writers to actually write and mean it, and for communicating with parents, family, and friends.

Suggestions for others wishing to use this strategy included: "use it more than once a month" (Gr.8 #1); "this is not as easy as it sounds [and the teacher should] use questions that would be on the test for that unit" (Gr.8 #2); "write carefully because you might miss something that might be on the test" (Gr.7 #1); "it helps the teacher know what the student thinks about it, and also gives them their point of view" (Gr.5 #2); and "they could be surprised at how it works" (Gr.5 #1).

### Teacher Surveys

All four teachers presented enthusiastic responses to the survey questions. This is a summary of their most pertinent comments; total responses can be found in Appendix I.

Attitudes The first half of the teacher survey was designed to determine whether or not teachers saw any changes in the attitudes, behaviors, or abilities of their students as this project progressed. The attitudes towards writing of the grade five students were reported as remaining fairly consistent throughout the project, but the three other teachers reported some changes in attitudes. Grade seven students were apprehensive initially, but their feelings "levelled off", whereas both grade four and grade eight teachers reported students becoming more

confident writers as this project progressed.

All four teachers reported that their students seemed to be much more comfortable with responding to higher-level questions after the journal writing experience than they were before it, but only two out of the four teachers reported actually noticing an improvement in the quality of written responses. One commented, *"The students that were better at doing that sort of thing sort of stayed at that level, and the poorer students, you could definitely tell improved but, as a whole, I would say that the responses did not change a lot in quality"* (Gr.5); the other reported, *"I think part of the difficulty or part of the lack of change was the amount of time that was spent on this in the grade 8 classroom. The amount of time was limited, and it was extremely spread out because of other various activities like a class drama that interrupted it. So some continuity was missing in my class experiment, and I think that affected the results ...it wasn't a concentrated time like I wish it could have been"* (Gr.8).

Quality of Responses and Test Marks Two teachers reported improvement in the quality of both prompted and non-prompted responses. One commented, *"I think the quality of the written responses did improve somewhat without my prompting. Students may have felt less fear of doing the writing incorrectly and could then write more freely and without inhibition. There was also some change in responses where prompting was given. Some students tended to write more and ask better questions. Others began to try and solve some of their questions on their own. Prompting may have put more of the responsibility of questioning and discovery on the students"* (Gr.7). The other felt that *"...there seemed to be a higher*

quality of response when prompted. The reasons may lie in pointing students in new directions, challenging them in areas not tread before" (Gr.4).

Teachers reported that they did not see a dramatic change in test marks before or after the project. For the most part, they reported, marks seemed to remain consistent throughout. This was borne up by the assessment of test marks; however, marks on the short-answer questions tended to be lower, and marks on the long-answer questions tended to be higher. This fact was not specifically noted by the teachers.

Questioners All teachers reported noticing some changes in either the students, or themselves as questioners. Their comments included: "dialogue writing offered an opportunity for expanding into different areas from the responses to the initial question ...students were bringing more and more of the personalities and personal histories to the question" (Gr.4); "Reading and responding to the journal entries made me think about the content area more deeply, and looking for good questions in order to prompt the students in the direction I wanted them to go really helped me to search out proper questioning techniques, and I believe I became a better questioner during this project" (Gr.5); "the quality of questions improved on the part of myself and the students" (Gr.7); and "It was an activity that helped me focus in on the kinds of questions I was asking and also to focus in on how those questions were worded, to see that I was getting a response that I really wanted, or whether my questions were misleading to the students, so it was an exercise that improved my questioning skills" (Gr.8).

Feelings About the Strategy When asked how they felt about the strategy, and whether it was worth the time spent, all four teachers gave positive responses: *"I like the strategy, and I will use it again on my own, next year...I believe it's worth the time. Even if a person did it with the whole class, I think there are enough benefits to, for at least one unit, spend that time ...responding to the journal entries"* (Gr.8); *"the students learnt a lot about the content just by thinking about it and trying to come up with questions and ideas ...the time spent would be worth it if it was done as a smaller portion of the unit work"* (Gr.7); *"I believe it would be a good part to use in your strategies in your classroom, but you may not want to use it exclusively, because some students really need a little more direction ...I learned a lot about how the kids thought. It was nice to get a personal dialogue going with these students, but it was time consuming..."* (Gr.5); and *"I believe that dialogue journal writing is an effective strategy for writing, thinking, responding. The only problem is that it can be cumbersome when the group is too large. Responding to journals is more time consuming but it is worth it, given the possibilities that are opened up"* (Gr.4).

All four teachers felt they would use dialogue journals again in their classrooms, and they also recommended a variety of other subject areas including Language Arts, Math, *"across the curriculum"* (Gr.4), and *"any subject area where the teacher needs a more personal view from each student, and to promote critical thinking in a different way"* (Gr.7). Their recommendations included *"using a smaller group as opposed to a large class, mainly because of the time needed to respond properly to each student"* (Gr.7); *"it could really be good to find the personal responses*

of the students and they would really feel comfortable I think asking questions and responding personally, perhaps more so than in a classroom setting where some students are reluctant to express their opinions ...as far as small group goes, I really believe that would be the only way to go ...the quality of response would tend to diminish if you were doing 25 - 30 every night" Gr.5); and "I think it would lend itself well to both the academically gifted and those students who are on a modified program. Their responses would just be at a different level" (Gr.8).

All four of these teachers have experience in multi-grade classrooms, and, when asked whether they felt dialogue journals would be effective in a multi-grade situation, they all said it would be because: "dialogue writing is instructional but also promotes independent thought and work" Gr.4); "you're always looking for some type of self-directed type of teaching that is both useful and valid for students" Gr.5); "it can help you deal with each student and their understanding of the course content, thereby enabling you to see whether you are teaching the students effectively" (Gr.7); and "I think probably if this experiment or this test was carried out on students who had grown up in a multi-grade school, in multi-grade situation, I would suggest that those students would likely respond at greater length and have answers that were more developed than what was found in students that went through a single grade system, simply because they have developed that independent study and independent thinking aspect to a greater extent" (Gr.8).

Summary Statements When asked for any major statements, generalizations, or observations that they would like to see included in this study to make it reliable and useful to others, teachers responded with the following

comments: "Dialogue journal writing not only improves and develops writing skills, but it can also enhance thinking skills and foster an atmosphere of exploration, risk taking, observation, and justification" (Gr.4); "I think dialogue journals are an effective way to communicate with most students in a particular subject area. Not only are they a good indicator of students' comprehension of a subject, they are also a good tool for learning, thinking and writing" (Gr.7); and "I think there are some valuable things that students and the instructor learn through dialogue journals. Some real communication happens between student and teacher. It is excellent practice in writing; thinking skills are stimulated ...I don't think necessarily that it's the answer for every situation and every subject area, but as one teaching tool set out to improve writing in the subjects, and to improve thinking, I think it would, over a longer period of time, and a more concentrated period of time than I did with my students" (Gr.8).

## SUMMARY

### Summary of "Growth" in Journals

Table 8 shows a summary of the increase/decrease in the number of words and thoughts for each individual student from early responses to later responses in their dialogue journals, and the increases/decreases in scores given by independent markers, for both writing and thinking, when the analytic scales were applied to both early and later journal entries. The "attitudes" column attempts to indicate whether students' feelings



regarding how dialogue journal writing helped them to become better writers and/or learners were generally positive or negative, as expressed in the student surveys completed at the end of this study. Some students tended to have mixed feelings; their attitudes are summarized as being uncertain.

Table 8 - summary of "growth" for each student - dialogue journals

<u>STUDENT</u>	<u># WORDS</u>	<u># IDEAS</u>	<u>WRITING</u>	<u>THINKING</u>	<u>ATTITUDES</u>
Gr.4 #1	+12	+1.3	+0.6	+0.8	positive
Gr.4 #2	-4	+3.0	-0.4	-0.9	positive
Gr.5 #1	-12	0.0	-0.3	-0.6	positive
Gr.5 #2	+18	+1.3	+0.8	+0.6	uncertain
Gr.7 #1	+56	+3.0	0.0	0.0	uncertain
Gr.7 #2	+105	+7.7	+0.3	+0.1	negative
Gr.8 #1	-4	-2.4	+0.8	+0.5	positive
Gr.8 #2	+2	0.0	+0.6	+0.6	positive
Group	+21.6	+1.7	+0.3	+0.1	positive

Both the average length of responses, and the average number of thoughts per response in the dialogue journals showed increases for the treatment group (see Table 8). Although writing as evaluated by the independent markers displayed only minimal improvement, the increase in length and quality of responses, coupled with the students' generally positive attitudes about their improvement as writers (five out of eight reported growth as a writer as a result of this experience) and the teachers' comments whereby three out of four reported a positive change in students' attitudes to writing as the project progressed, lead me to conclude that there was evidence of improvement in writing in the dialogue

journals, for the students in the treatment group. The variation in amount of growth recorded for individual students also leads to the conclusion that some students definitely improved more, as writers, than others did. The fact that students' comments about changes in their attitudes and abilities were often guarded and showed uncertainty, leads me to believe that students may not have been fully aware of the impact that this strategy had on them. It appears that more time would be needed, and more evidence would have to be collected, before students would feel totally confident in their abilities to respond well in a dialogue journal writing situation.

#### Summary of "Growth" in Test Writing

Table 9 summarizes individual student "growth" in length of response, and the number of ideas per response, from pretest to posttest; the increase/decrease in marks on short-answer and long-answer questions from pretest to posttest, as graded by the classroom teacher; and the "growth" in assessment of writing and thinking, as assessed by independent markers through the application of the analytic marking scales.

There was an improvement in both the length of responses, and the number of ideas per response, for the treatment group, on test writing situations. This, together with the improvements also shown in both teacher grading on long-answer test questions, and assessment of writing quality by independent markers (Table 9) lead me to conclude that students generally displayed noticeable growth in test writing after such a short period of integrating dialogue journals into content area classrooms. Several students and all teachers also reported on their surveys that

students approached posttest long-answer questions with more confidence, and most appeared to have improved in ability to respond to long-answer questions, as a result of this dialogue journal writing experience.

Table 9 - summary of "growth" for individual students  
- test situations

<u>STUDENT</u>	<u>WORDS</u>	<u>IDEAS</u>	<u>SH ANS</u>	<u>LG ANS</u>	<u>WRITING</u>	<u>THINKING</u>
Gr.4 #1	-2.5	+1.0	+6%	-7%	+0.7	+0.7
Gr.4 #2	+20.5	+2.0	-9%	+23%	+1.5	+2.0
Gr.5 #1	+31.5	+1.0	-4%	+24%	+1.1	+2.1
Gr.5 #2	+1.0	+0.5	-24%	+33%	+0.7	+0.4
Gr.7 #1	+27.0	+2.0	-3%	+20%	+0.7	+0.8
Gr.7 #2	-36.5	-3.0	-57%	+13%	-0.9	-0.5
Gr.8 #1	+43.0	+3.7	+8%	+58%	+3.0	+2.7
Gr.8 #2	+31.8	+3.3	+22%	+58%	+2.8	+2.5
Group	+14.5	+1.3	-7.6%	+28%	+1.2	+1.3

#### Summary of "Growth" in Learning

It is difficult to separate 'learning' from 'thinking' but, for the purposes of this study, the term 'learning' is being used to refer to the actual retention of content area knowledge. Overall test marks did not change at all, for the treatment group, throughout this study (Table 7), although there definitely was fluctuation in marks among individual students. The slight decrease in marks for short-answer questions was also counterbalanced by the significant increase on long-answer questions which comprised a lesser portion of the total test marks. On the surveys, six out of eight students attributed their improvement in long-answer test marks to the journal writing project in which they had just participated.

It can be concluded, therefore, that the majority of this group of students experienced more difficulty than usual with the retention of facts as a result of this journal writing experience, but this was offset by the improvement shown in responding to long-answer questions. It can also be concluded that some students experienced more success than others with this strategy, and one experienced a great deal of difficulty and confusion with this entire unit, possibly as a result of this journal experience.

#### Summary of "Growth" in Thinking

There was only a minimal overall increase in thinking scores awarded by independent markers (Table 8) for dialogue journal writing for this group of students. Further assessment of the structures and strategies used by students to express their thoughts in the journals indicated that there remained a lot of work to be done in many areas, but there was also evidence of students stretching and extending their thinking in many new directions throughout their journal responses. There was however, substantial growth in thinking during test situations measured through application of the analytic marking scale to assess thinking and through an examination of the marks assigned by classroom teachers to the long-answer portion of the two tests (table 9). A major focus for the teachers who marked these questions was on what was being said, as well as on how it was said; the focus was on thinking as expressed in writing. Almost all students reported some growth in themselves as a thinker and/or as a questioner, on the student surveys, and all of the teachers also reported seeing changes, either in the students or in themselves as questioners.

It seems reasonable to conclude, therefore, that although the amount of time spent on journal writing was limited, it appears to have had a positive impact on thinking as expressed in writing on long-answer responses to questions on a test.

### Conclusion

Dialogue journal writing was recommended by seven out of the eight students in the treatment group, and all of the four teachers who took part in this study as a useful strategy to promote writing, thinking, and learning across the curriculum, and results of the assessment appear to substantiate this claim.

## CHAPTER 5

### SUMMARY

#### PURPOSE OF THE STUDY

Recent literature in the field of Language Arts instruction confirms the basis on which this study was designed through the following statements pertaining to writing instruction: educators are constantly seeking innovative ways to improve students' writing abilities (Jenkinson, 1988) and cope with individual differences through the provision of a variety of language experiences (Vygotsky, 1978); the integration of writing instruction into content classrooms is strongly advocated (Gere, 1985; Vacca & Vacca, 1986) as a means of providing opportunities to use the strategies taught in meaningful situations (Fitzgerald & Teasley, 1986; Rosenshine, 1987) and as a means of facilitating the development of higher-level thinking in students (Parker & Goodkin, 1987); and dialogue journals promote understanding and cognitive growth (Fulwiler & Young, 1982), increase the amount of learning taking place (Shuy, 1987), encourage students to delve more deeply into a subject (Kroft, 1986), and promote critical thinking (Atwell, 1990). Based on an extensive review of research therefore, this study set out to investigate the premise that

asking students to take part in a dialogue journal writing experience in either science or social studies classes should help them to improve content area writing through meaningful practice, to improve retention of content materials through more extensive interaction with the concepts, and to improve higher-level thinking skills through initiating responses to the learning on a personalized basis and formulating appropriate responses to teacher prompts which attempt to elicit a variety of higher-level responses from the students.

## SUBJECTS

Eight 'middle years' students in grades four to eight were chosen as the target group, and science and social studies classrooms were selected as the content area in which the treatment would be applied. The students all attended a school with a population of approximately two hundred seventy students in a small town in rural Manitoba. Students in grade six were not selected to take part in the study since the intent was to keep the treatment group small, and it was felt that choosing grades four and five, and grades seven and eight would provide a group that was fairly representative of middle grade classrooms. Students selected were generally in the average ability range, felt fairly comfortable with the writing process, worked reasonably well independently, and seemed to be performing below ability level in the area of written expression to higher-level thinking questions. Four classroom teachers also took part in the study.

## PROCEDURES

The students and their regular classroom teachers became the researchers for this school-based field study which extended over a period of six to eight weeks during the time between January and May, 1992. During January and February, students and teachers completed a unit of study in the selected subject area using whatever instructional strategies were commonly employed for that particular unit. The only special requirement was that the test at the end of the unit contain the usual mix of short-answer questions and at least two long-answer, higher-level thinking questions that would be considered by the teacher to be typical for the type of unit being studied. The completed tests were saved and used as pretests for the comparison of test marks at the end of the study.

Between late February and early May, teachers chose another unit of study that seemed to parallel the difficulty level of the one previously studied. They did the same types of activities and employed the same teaching/learning strategies that had been employed throughout the previous unit, with one exception - this time one aspect of the written portion of the unit, such as responding to comprehension questions, copying notes, or writing a report, was substituted for dialogue journal writing. At the end of this unit a test was designed which closely paralleled the test written for the previous unit. This test became a posttest for the purposes of comparison.

Dialogue journal writing involved having the students spend



approximately ten minutes at the end of each period, or twenty minutes at the end of every alternating period responding in their journals to the content being studied. Teachers then responded in writing to student entries before the next class period, trying to praise student efforts, encourage experimentation and risk-taking, and lead students to think more deeply about the subject being studied. Each time students wrote in their journals, they were asked to read the teacher's response and react to it, and then react freely to anything else they wished to talk about in relation to the unit being studied. It was hoped that this experience would enable students to increase their abilities and to develop confidence in themselves as writers, learners, and thinkers.

Time allowed for individual responses was not meant to be a factor. Students were allowed more time if it was needed, and the opportunity of taking the journal home and responding more fully was allowed if the time could not be provided within the school day. This, however, did not happen on more than a couple of occasions. Generally, students found time at the beginning or end of other periods to finish the responses they had started for that day. The best way to fit the journal writing into the class periods was determined by the classroom teacher, with flexibility provided for each individual lesson.

At the end of the project, both students and teachers were asked to respond to survey questions designed to determine their feelings about the use of this strategy as a means of improving writing, learning, and/or thinking. These responses to the survey, together with the pretests and posttests, and a sampling taken from the journals kept by the students provided the data to be assessed.

## SCOPE AND LIMITATIONS

The focus of this study was to investigate and assess the implementation of a particular strategy (dialogue journal writing) used with certain students (the eight members of the treatment group) within a specific situation (content area classrooms). The scope of the conclusions drawn following assessment of the data collected, and the applicability of these conclusions within a variety of situations, have been limited by a number of factors:

1. It is difficult to assess writing samples objectively. The subjective nature of this type of assessment, which is based primarily on individual interpretation, makes the results less reliable.

2. The analytic marking scales used to assess thinking were designed specifically for this study. Although they were 'tested' by classroom teachers in a limited manner before being applied here, their validity was not properly established prior to use in this study. They also allow for individual interpretation to a certain extent. The marks assigned for thinking, therefore, are subject to scrutiny.

3. Only one unit of study in each of two subject areas was assessed, with only two grade levels per subject area, and only two students per grade level. Subjects were all of average ability level, and all lived in the same community and attended the same school, so it would be impossible to make sweeping generalizations based on the limited range of the data collected.

4. The length of time for the total treatment was also limited to between six and eight weeks. Data would have been more reliable from a longitudinal study designed to track these same students over a longer period of time.

5. Assessment of 'learning' was based on one set of test data only. Since it is impossible to control all the variables in "natural" classroom settings, it is possible that a variety of unidentified factors may have influenced the results.

6. Students and teachers were so cooperative as researchers, that the possibility of a "halo effect" certainly exists.

Despite these limitations, however, the data collected and assessed do permit concluding statements which pertain to this particular group of students who were functioning in as natural of a classroom setting as possible. It also allows for the possibility that other students may experience similar successes in similar situations.

## RESEARCH QUESTIONS / ASSESSMENT

Data collected were assessed to try to provide an answer to six research questions asked at the outset of the investigation.

*Does the use of response journals in content classrooms help students to develop a more positive attitude about themselves as writers, and to feel more comfortable and self-assured when asked to write responses which are to be evaluated by the*

*teacher?*

Two of the eight students involved in this treatment group felt that they were not good writers, and that their feelings did not change throughout the journal writing project. One student felt very confident about his ability at the beginning of the project, and this confidence was maintained throughout. This student did report that he kept a journal at home, and he felt that it was largely responsible for his ability to write with confidence. The other five students all reported growth as writers, in both confidence and ability. Only three actually reported feeling more comfortable with long-answer test questions at the end of the project, but seven out of the eight students showed an improvement in the actual marks earned on the posttest long-answer questions as compared with the pretest long-answer questions. It is probable, therefore, that most of the students had not yet done enough dialogue journal writing to perceive that dialogue journals had had a real impact on their confidence in their ability to handle these questions comfortably.

One of the four classroom teachers reported that attitudes remained fairly consistent throughout the project, but the other three all reported students becoming more confident writers as this project progressed. All four teachers also reported that the students seemed to be much more comfortable responding to higher-level questions after the journal writing experience than they were before it. Based on both student survey responses and observations by teachers, therefore, it appeared that the use of response journals in content classrooms did help most of the students to develop a more positive attitude about themselves as writers, and to behave in a more comfortable and self-assured manner when asked to

write responses which were to be evaluated by the teacher.

*Does engaging in a dialogue journal writing experience which includes teacher responses that praise strengths and encourage experimentation, help the student's written product to improve?*

Improvements in writing were assessed by comparing the first three journal entries done by each student in the treatment group with the last three entries. These samples were examined for the average number of words per response, the average number of thoughts or ideas per response, and the quality of the writing as determined by independent markers who applied a general impression marking scale and an analytic scale to assess writing to each of these samples. The same procedure was used to assess improvements in writing in a test situation by comparing pretest and posttest responses to long-answer questions.

When the differences in all of these scores were compared, it was found that improvements were shown by most students in all of these areas. Responses were generally longer, contained more thoughts, and were judged by independent markers to be of higher quality at the end of the journal writing project than they were at the beginning of the project. Both students and teachers also reported a noticeable increase in students' ability as writers as the project progressed.

An examination of teacher responses in the journal samples also showed that teachers did praise student strengths whenever appropriate. They also patiently provided answers to questions and challenged students to consider ideas further, or to consider them from a different angle, as well as encouraging risk-taking and the expression of personal opinions.

Based on these results, it is reasonable to suggest that the practice in dialogue journal writing in the content areas, accompanied by appropriate teacher responses, did result in an improvement in the writing abilities for almost all of the students in the treatment group.

*Does practice in expressing content knowledge in written form help the student to display improvement in long-answer test responses and therefore, to achieve higher grades on tests?*

Improvements in learning were assessed by comparing test marks as assigned by the classroom teachers, to both pretest and posttest questions. Overall test results were generally not very different from pretest to posttest for most students, although there were dramatic differences in short-answer and long-answer results in several cases. Responses to objective, short-answer questions generally did not receive as high marks on the posttest as they did on the pretest. Student responses on the surveys were mixed - some indicated that they experienced more difficulty remembering facts using this method of study; others expressed confidence that they had found this journal writing strategy helped them to do well on the short-answer portion of the tests.

Responses to subjective, long-answer questions on the tests, however, improved for all of the students in the treatment group, and several of them attributed this improvement to the journal writing experience. It appears, therefore, that journal writing is more effective for some students than for others. Since all students improved on the long-answer responses, this strategy did appear to be effective for this group as a means of improving their ability to respond at a higher-level to long-answer test questions. Although the effects of this strategy on

short-answer test questions remains questionable, journal writing in content classes does provide practice in expressing content knowledge in written form, and it does appear to be a strategy which can help students to achieve improvement in long-answer responses to test questions.

*Does the type of student/teacher dialogue/interaction taking place through response journals in content classes assist students in retaining content knowledge?*

This question was more difficult to answer, since the design of the study includes the comparison of both short-answer and long-answer test questions. The intent of this comparison was to consider the short-answer question portion of the test as the vehicle to measure retention of content knowledge, and the long-answer portion of the test as the vehicle to measure ability to respond at a higher level to the material being studied. If this design is maintained, results would indicate that this project appeared to impact negatively on content retention for two students, positively for one student, and negligibly for all the others. This would suggest that students had varying degrees of success with retaining facts throughout this dialogue journal writing experience, and that dialogue journal writing may not have a positive affect on the kind of questions generally asked by teachers on the short-answer section of content area tests.

An examination of the results of the assessment of the long-answer test questions, however, showed that the average number of words per response increased by 39%, and the average number of thoughts or ideas per response increased by 42% from the pretest to the posttest. Since six out of eight students showed improvements in length of long-answer test

responses, and seven out of eight students showed improvements in number of ideas per response, the assessment of content retention becomes more confusing. Marks awarded by classroom teachers for long-answer questions also showed an overall improvement of +28%, with seven out of the eight students showing improved grades. How can students write considerably more words and more ideas on long-answer test questions, and be given grades that indicate substantial improvement as well, without having retained more knowledge about which to write? It is unclear from this study whether these improvements are simply the result of improved ability to express knowledge in writing, or whether students have been able to retain more of the type of knowledge that is necessary to successfully respond to long-answer questions. Although the type of student/teacher dialogue taking place through response journals in content classes may not assist students in retaining content knowledge, more research would be necessary to determine the actual impact of this strategy on total knowledge retention.

*Does individualized attention provided through teacher responses and prompts in the dialogue journals assist students in stretching their thinking within the discipline being studied and enable each student to more capably handle written responses to higher-level thinking questions?*

Improvement in thinking was assessed by having independent markers apply an analytic scale to assess thinking to both the journal samples and the test responses that had been assessed for writing ability. Scores given for four categories of thinking showed negligible improvement (+9%) for journal samples, but a more impressive increase for seven out of eight



of the students in the treatment group (average of +48%) on test writing samples.

Journal samples were also examined for indications of students attempting to employ higher-level thinking strategies in their responses. There was definite evidence of many of these strategies being attempted. There were also indications of some areas where more practice would be needed in order to effectively employ these higher-level strategies but, although weaknesses did show up in the writing, growth was also seen in these same areas as the project progressed.

All teachers, and almost all students reported growth as thinkers in the survey responses completed at the end of the unit, and most seemed to feel that the journal writing experience was responsible for that growth. Based on this data, therefore, it can be stated that the individualized attention provided through teacher responses and prompts in the dialogue journals assisted students in stretching their thinking within the discipline being studied and enabled most students to more capably handle written responses to higher-level thinking questions during test situations.

*How do teachers and students feel about dialogue journals as a strategy for enabling students to facilitate growth in writing and thinking abilities?*

Seven out of eight students recommended dialogue journal writing as a useful strategy to promote writing, thinking and learning; one student did not recommend journal writing. Students suggested that this would be a useful strategy to employ in other areas as well. All four teachers also recommended this strategy as a means of improving writing, thinking

and learning across the curriculum. Teachers noted its potential for great success in multi-grade situations as a means of meeting individual needs and maximizing individual contact time. Both assessment results and survey responses seem to suggest that dialogue journal writing in content classrooms is an effective strategy for enabling students to facilitate growth in writing, learning, and thinking abilities.

## IMPLICATIONS

### For the Classroom

As a result of this study, this researcher suggests several implications for classroom application. With the changing role of teachers, and the heavy load being placed upon schools by society today, teachers are finding it increasingly difficult to be "all things to all people" and to meet the individual needs of all the students mainstreamed into their classrooms. With so many demands upon their time, many teachers are looking for innovative ways to increase efficiency. Implementing a strategy that will enable students to develop writing skills, content retention abilities, and higher-level thinking skills all at one time would seem like an invaluable strategy to pursue. Since research indicates that using writing-to-learn certainly appears to be an effective strategy (Gere, 1985; Vacca & Vacca, 1986), introducing journal writing into content classrooms would give students one more tool to help increase their effectiveness as learners.

My thirty years of experience as an educator has shown that it is during the early part of this middle years time period that students often begin to lose some of the enthusiasm for learning and the intrinsic motivation that was usually part of their primary learning experiences. This is also the age level at which most students have acquired some comfort with the writing process as a means of communicating, and the grade level at which classroom teachers generally expect students to begin focusing on learning more content, and reacting to the content being learned in written format (Atwell, 1990). Students are also expected to begin taking an active part in a variety of discussion activities during this stage of their education, but it is often difficult to give reluctant students enough of an opportunity to receive ample practice in discussion with the teacher during traditional classroom discussion formats. The personal responses directed from the teacher to each of the students taking part in a journal writing project would provide students with a much-needed tutorial that they might not be able to get otherwise because oral dialogue is noisy, and a considerable amount of time is needed for each student to be able to make a one-on-one contribution to the dialogue. The use of dialogue journals is definitely congruent with the theoretical stance of dialogue as the heart of learning, and regular use of this strategy offers a valuable supplement to oral dialogue in the classroom (Shuy, 1987).

With educational restraints currently being imposed, larger class sizes pose additional problems for teachers who are attempting to meet the individual needs of ever-increasing numbers of students. Smaller rural schools have always been faced with multi-graded classrooms, and even

larger schools are now being forced to choose multi-graded classes as an option to 'unworkably' large classes. These multi-graded classrooms further complicate the task of trying to provide instruction at the appropriate level for individual students. Dialogue journal writing is a means of addressing these problems in a meaningful way. Multi-grade teachers and teachers of large classes are always looking for some type of self-directed teaching that is both useful and valid for the students. Dialogue journal writing is instructional but also promotes independent thought and work. Dialogue journals can also help deal with each student's understanding of the course content, enabling the teacher to see whether the students are learning effectively or if instruction is weak or too sporadic.

Although this study did not deal with students who were considered to be particularly bright, or gifted, it seems reasonable to assume that gifted students could easily be led to fulfill their potential through this type of tutorial strategy. In schools where gifted students are dealt with within the confines of the regular classroom as opposed to a "pull-out" model, it is often difficult to motivate the gifted and to provide the individual attention that will help them to grow academically instead of just drifting along, practicing what is already known rather than delving into unfamiliar realms. Since students who are bored and unchallenged often tend to become disruptive in class (Walker, 1986), dialogue journals could be an effective way to stimulate and inspire these children to achieve their thinking and learning potential.

Students on the other end of the learning continuum could also have their individual needs met by using journal writing to help them make

sense of their learning. Mainstreamed special needs students require strategies that will provide immersion in language and help to capture and focus their attention so they can learn to process information efficiently (Atwell, 1990). Journal writing promotes language development, makes learning relevant, provides individual attention without imposing upon the time and attention required by others in the class, and fosters learner independence.

This has also proven to be a useful strategy to assist classroom teachers in identifying students who are having difficulties about which the classroom teacher is unaware. Further study and assessment were prescribed for the student who had so much difficulty with this unit. Patient and elaborate responses/explanations from the teacher seemed to have little effect on her. Confusion of words such as 'renewable' and 'reuseable' and the obvious lack of ability to make sense of the text led the researcher to wonder if this student had an undetected reading problem. A learning assessment verified that this was true, and the student was able to receive remedial help as a result of this new information.

Although responding to journals is time-consuming, the teachers involved in this study all felt that the time spent was definitely worth the extra effort. Teachers planning to implement this strategy for the first time would do well to choose a small group of average to above-average students and try it with them first. Once everyone is comfortable with the strategy, teacher responses can become less frequent, and the group can be enlarged, with the teacher responding more regularly to the new members of the group. Some time invested in training the more

experienced students to discuss and respond to each other in groups would also enable more independence and take some of the time pressure off of the teacher. It is important, however, to keep the group workably small, and to rotate students in and out of the dialogue journal writing group so that quality teacher responses can be provided for all students to facilitate growth in thinking that can only be enabled through well-directed teacher responses.

For teachers planning to implement this strategy, Atwell (1990) tells us that teacher prompts can be considered successful if they engage writers, and help them to think and to learn. She suggests that they should be open-ended; they should encourage personal involvement such as developing opinions, drawing on prior experiences, and attempting envisionment of other persons or living things; and they should involve children in a wide variety of writing and thinking experiences. A good range of prompts, she suggests, " led to a diversity of responses and a fluid definition of what it means to use writing to learn; it also allowed students to find their particular strengths as writers" (p.167).

#### For Future Research

The results of this study provide the basis for the following suggestions for further research:

1. Time - It would be valuable to do a more longitudinal study, continuing these case studies over time, and having the students engage in more units of this type to see how the marks would be affected after a longer time period.

2. Ability levels - It would be useful to collect data from special

needs students at both ends of the learning continuum to see whether speculations about the effectiveness of this strategy as a means of meeting their needs would be supported by the data collected.

3. Teacher prompts - It would be useful to study teacher prompts, and look for types of prompts that appear to elicit the most in-depth responses from students, identifying both effective and non-effective comments.

4. Replication of the study - Now that the four teachers have experience with the implementation of this strategy, it would be interesting to replicate the study using the same teachers and subject areas, but different students, to see whether or not similar results are obtained the second time the strategy is implemented. Studying differences in teacher prompts the second time could also be valuable.

5. Control group - It would be interesting to replicate this study with an attempt at a control group who would not be engaging in the dialogue journal aspect of the program, enabling a comparison of the differences in growth for the two groups.

6. Grade level studies - It would be useful to do more in-depth grade-level studies, using many more subjects at each grade level, to determine at which grade students seem to make the most growth. This would allow recommendations to be made about the most opportune time to implement this type of strategy.

7. Younger students - It would also be beneficial to experiment with students in primary grades to try to determine how much writing ability students need for this strategy to be effective.

8. Learning styles - It would be useful to assess learning styles

for individual students, and then determine the rate of growth for students within each learning style so recommendations could be made about which type of students appear to find this strategy the most beneficial.

9. Across the curriculum - It would also be valuable to compare the results of this study with data collected in other subject areas as well. Results indicate that this strategy should be effective to develop critical thinking and problem-solving skills in many different subject areas.

## CONCLUSION

This dialogue journal writing project was effective in promoting and improving writing, learning, and thinking for the students involved in this study. Although the subjects selected were middle years students, there is a great deal of literature which testifies to the success of similar programs in high school and college/university classes. I believe that students need a reasonable amount of comfort with the writing process to be able to have success with a project of this type, so I would not recommend it for students below grade four unless they are particularly gifted. I would like to submit, however, that all students from grade four to university age should be given some opportunities to engage in writing-to-learn strategies in at least one unit of content area study each year to enable them to develop and extend their abilities to respond at a higher level to the content materials being studied.



The abundance of research testifying to the effectiveness of integrating language-across-the-curriculum and using writing-to-learn, plus the conclusions drawn from the data collected during this study, make it reasonable to assume that teachers and students attempting to integrate dialogue journal writing into content area classes can expect the students involved to display noticeable growth in writing, learning, and thinking within a relatively short period of time.

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## APPENDICES

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### APPENDIX A - A RECORD OF OBSERVATIONS

This is a checklist which was given to the classroom teacher to complete every few days to record observations which illustrated a student's attitudes and feelings toward the use of dialogue journals. It was designed specifically for this study. It was meant only as a means of helping teachers to record observations to assist in the evaluation of the study; it was optional, and was not collected at the end of the study.

TEACHER CHECKLIST:

Name of Student \_\_\_\_\_

<u>DATE</u>	<u>TIME TO START</u>			<u>COMMENTS</u>
	<u>Immediate Start</u>	<u>Reasonable Time</u>	<u>Slow to Start</u>	

<u>DATE</u>	<u>INTEREST IN WRITING</u>			<u>COMMENTS</u>
	<u>Sustained Throughout</u>	<u>Wandered a Little</u>	<u>Short Atten. Span</u>	

<u>DATE</u>	<u>ATTITUDE TO PROJECT</u>			<u>COMMENTS</u>
	<u>Excellent</u>	<u>Good</u>	<u>Fair</u>	

<u>DATE</u>	<u>GENERAL COMMENTS</u>

## APPENDIX B - SURVEY QUESTIONS

These are the survey questions that were given to the students and the teachers at the conclusion of the project. They were designed to elicit information about attitudes and feelings, as well as recommendations regarding the use of dialogue journals in content classrooms for the purpose of improving students' ability to write, to learn, and to think.

### Student Survey

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January? Why do you think this happened?

5. Do you think dialogue journal writing effected the way you

learned Science or Social Studies material? Why do you feel this way?

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

8. What suggestions would you make for another student or teacher interested in using this strategy?

9. Would you recommend dialogue journal writing to others? Why?

### Teacher Survey

Please respond to the following questions regarding the study we have just completed. You may either respond in writing, or orally onto a tape recorder.

1. Have you seen any change in students' attitudes to writing in the content areas, as a result of this project?

2. Did you notice any change in students' 'comfort level' when responding to higher-level questions after the dialogue journal experience compared to before it?

3. Did you notice any change in the quality of written responses at a higher-level without direction or prompts from you as the project progressed, or did self-directed responses remain at the same level both on tests and in journals? What would you suggest as a possible reason for this?

4. Did you notice any change in the quality of written responses at a higher-level as a result of direction or prompts from you in the journals as the project progressed? What would you suggest as a possible

reason for this?

5. How did the test marks of the 'treatment group' compare to those of the rest of the students in the class both before and after the project? If there was a significant difference in short-answer questions or long-answer questions, to what did you attribute this difference?

6. Did you see any significant change in either the students or yourself as 'questioners'? What might be the reason for this?

7. How do you feel about this strategy as a means of improving writing, learning, and/or thinking for students at your grade level? Have these feelings changed any throughout the project?

8. How did the time spent responding to journals compare to the time spent planning and marking other writing activities for the rest of the class? In your opinion, was it worth the time?

9. Could you see yourself ever using dialogue journals in your classroom again? If so, could you see them as being useful to students in any other subjects or circumstances?

10. What recommendations would you have for others who might be considering the use of dialogue journals (type of student; whole class vs small group; applicability to other grade levels and subject areas, etc.)?

11. Would you see this strategy being useful in a multi-grade situation? Why do you feel that way?

12. Would you consider the results to be valid from all of the students in your class who took part in this study, or would there be a student whose results you would not recommend as being valid? Why might they be invalid?

13. Are there any major statements, generalizations, or observations

that you would like to see included in the written portion of this study to make it reliable and useful to others?

## APPENDIX C - GENERAL IMPRESSION MARKING SCALE TO ASSESS WRITING

This scale was taken from the Manitoba Department of Education Writing Assessment Program, May, 1982. It was used to assess the overall quality of the writing samples taken from both early and later entries in students' dialogue journals as well as the long-answer test questions on both pretests and posttests.

### General Impression Marking Scale (GIM)

General Impression Marking is a judgement about the overall quality of a students' writing given the purpose of the writing and the audience to which the writing is addressed. The writing should be read quickly for a general reaction. No marks should be put on the paper at this time. After a group of papers have been read quickly, they should be ordered generally from the best paper to the poorest paper and scores should then be assigned (6 - High, to 1 - Low). Descriptions for the general impression are given below. The teacher should keep in mind that the evaluation is general - that is, no one quality of the paper such as organization or sentence structure should constitute the whole score. Judgements about those qualities are covered in the analytic scales.

It is often a good idea to ask a colleague to read over (quickly) the set of papers and mark them independently (without being aware of the first markers' scores). Then the scores should be compared. Scores that differ 2 or more should be reread in light of the second scorer's marks.

The GIM is a quick, impressionistic score. Evaluation of specific attributes of the writing should be left to the analytic marking scales.

General qualities and suggested scores are listed below:

5 or 6	High
3 or 4	Middle
1 or 2	Low
XX	Insufficient Information

The GIM scale attempts to rate compositions in a general, global manner. Areas covered include the quality of thought evidenced in the paper, the

effectiveness of the overall organization, the effectiveness of the overall presentation, and the effectiveness of style and word choice.

HIGH (5 or 6): The paper evidences thinking on the part of the writer that is above what would normally be expected at this grade level. The quality of thought reflects a developmentally mature point of view. The paper is not overly egocentric or narrow in perspective. A broad, non-egocentric point of view would describe and take into account the actions and feelings of all the characters or relate the description of what is happening beyond the immediate context of the author. The organization of the paper indicates careful planning, with an idea or event following logically from the preceding one. The paper is presented in an effective fashion, and it follows an organization such that the reader has no difficulty in following the sequence of ideas or events in the paper. The style is appropriate to the level of thought, and word choice and use reflect a grasp of language that is above average. The level of the paper is appropriate for the audience being addressed and fulfils the stated purpose of the paper.

MIDDLE (3 or 4): The paper evidences thinking on the part of the writer that is appropriate to the grade level of the student. The quality of thought reflects what would be expected at this age. Although the paper is essentially egocentric in perspective, this does not interfere with the overall movement and organization of the paper. Though the paper may reflect the point of view of only one character or the author, it does take into account the actions and feelings of all the characters. The paper is obviously planned, though at times the writer may wander from the central thrust or movement of the paper. The ideas or events are generally sequenced in a meaningful fashion in that events in general follow one another. The style is, for the most part, clear and word choice and use reflect a grasp of language that would be expected at this grade level. The level of the paper may not, for the most part, take into account the audience being addressed, but, in general, it fulfils the purpose of the paper.

LOW (1 or 2): The paper evidences thinking on the part of the writer that is obviously immature. The quality of thought reflects a point of view substantially below what would be expected at this grade level. The point of view is essentially egocentric to the point that it interferes with the relating of ideas and events. A narrow, egocentric point of view reflects only the feelings and reactions of one character, or of just the writer and does not describe the feelings and actions of all of the characters. The writer does not relate what she/he is describing beyond his/her personal reaction. The organization of the paper is difficult to follow and does not reflect any careful planning. Ideas or events do not logically or sequentially follow each other. The movement of the paper is interrupted by wandering thoughts and events, unnecessary asides, or inappropriate information. The style is inconsistent and immature, and repetitive or uninteresting structures are consistently used. Word choice is unclear, inappropriate, and distracting. The writer seems to have no awareness for the audience or reader and seems to have no purpose in writing the paper.



## APPENDIX D - ANALYTIC SCALES TO ASSESS THE QUALITY OF WRITING

This scale was also taken from the Manitoba Department of Education Writing Assessment Program, May, 1982. It was used to assess the quality of six major elements of the writing samples taken from the students' dialogue journals and the long-answer portions of their tests.

### ANALYTIC SCALES

After the writing has been read and scored for the GIM, it should then be reread and marked on the following nine major qualities:

1. Organization and Sequence
2. Wording and Style
3. Focus or Theme
4. Ideas
5. Choice of Details and Elaboration of Ideas
6. Sentence Structure
7. Usage
8. Punctuation and Capitalization
9. Spelling

A score of 1 to 6 should be assigned to each piece of writing for each of the above categories. At times, when papers tend to be lengthy, a paper may need to be read twice in order to assign a score in each category.

Read the description of each scale carefully before scoring papers and, if needed, refer back to them as papers are being marked. This is to insure consistency in the marking of all papers.

[Note: For the purposes of this study #7 -#9 did not receive any attention, since there was no reason to expect any change in these areas. The descriptions for these subscales have, therefore, not been included in this appendix.]

#### 1. Organization and Sequence

In both process (Writing to Explain) and narrative (Story) writing, the organization or sequence should generally follow a temporal (time) sequence. In writing instructions, the sequence should usually follow the steps in the process itself; in narrative writing, the sequence should follow a series of events. In both, the organization for the paper should effectively introduce the process or situation in general, lead the reader clearly through the steps of the process or the series of events, then effectively come to closure at the end. In story writing, the writer should introduce effectively the setting, the characters, and should build from this introduction. In both types of writing, the introduction and

conclusion should aid the reader in thinking about and understanding the process or series of events.

High (5 or 6) The writer has an effective opening that catches the interest of the reader. The organization clearly follows a sequence of events or steps without wandering. Effective transitions from one event or step to another are used to cue the movement of the paper for the reader. The closing is effective in that it leads the reader to feel that the story or process is over and has come to an understandable conclusion.

Middle (3 or 4) The writer generally introduces the process or story, but does not catch the interest of the reader, or the writer begins the writing without providing the reader with the necessary background of the story or explanation. Generally, each of the events or steps is appropriately described, but the writer may not have the movement of events clearly laid out and may not have used effective transitions to aid the reader in following the events or steps. The paper may have a weak ending or may leave the reader with little or no sense of closure.

Low (1 or 2) The writer has not attempted to catch the interest of the reader in the opening. Necessary background information may be lacking in the paper. The sequence of events in the paper may be confusing, left out, or ordered so inappropriately that the reader cannot follow the sequence of events or steps. Transition phrases are not used to aid the reader in following the events, and the reader is left with little or no feeling of closure or completeness at the end of the paper. The entire paper may leave the reader confused about the steps of the process or about what really happened; the reader may be confused about the importance of the events either to the characters described or to the reader.

## 2. Wording and Style

Wording refers to the choice of vocabulary the writer makes in writing the paper. Style refers to how the writer strings those words together in phrases, sentences, or longer thought-units. Word choice needs to reflect both precision and maturity, as well as appropriateness to the audience being addressed. The writer should be aware of the level of the audience and explain words used in a highly specific or technical manner. The words and the ways in which they are strung together should be clearly understandable.

High (5 or 6) The words chosen by the writer reflect sensitivity to the audience being addressed. The words are precise and exact, with clear reference. The style is interesting, sentences are varied as to length and structure when appropriate, and the structures are clear and easy to read and understand. The style is engaging, and the words help the reader clearly "see" and understand the process or series of events.

Middle (3 or 4) The words chosen by the writer may have appropriate referents, but they do not reflect a sensitivity to the reader/audience. The emphasis seems to be on the content, rather than on the communication. When technical or specific words are used, they are not well-explained or defined. The style is repetitive to the point of being noticeable, or inappropriately long or short sentences interfere, at times, with the ease of reading. Though correctly used, vocabulary may be too general for the type of writing.

Low (1 or 2) The writer seems to have no sense of audience whatsoever. Words or phrases chosen may not aid the reader in understanding the process or events and may interfere with comprehension. Sentences are either too long to be read with ease, or too short to create a flow. The words and style seem colorless, non-engaging, uninteresting.

### 3. Focus or Theme

The writer chooses aspects, incidents, and details because they relate to the purpose of the writing. She/he seems to have a central focus and maintains that throughout the piece. There seems to be a theme holding each of the paper's elements together.

High (5 or 6) The writer clearly has a central focus for the paper and develops each of the elements within the paper so that it directly relates to that central focus. The purpose of the paper is clearly discernible. The writer does not present information, opinions, or details that do not relate to the central purpose of the paper. At the conclusion, the reader feels as if the events or process has been sufficiently covered without undue reference to unimportant or unrelated material.

Middle (3 or 4) The writer has a central focus for the paper, but the relationship of each of the elements within the paper is not clearly related to the focus. The purpose of the paper is not always clearly identifiable and, at times, the writer interjects information, opinions, or details that do not relate to the central focus. These intrusions, however, do not seriously interfere with the thrust or movement. At the conclusion, the reader feels as if the events or process have been covered, but that the movement of the paper has been interrupted along the way by unnecessary, incomplete, or unrelated elements.

Low (1 or 2) The paper does not seem to have a central focus or thematic movement. Elements within the paper seem unrelated to any central purpose. Information, opinions, and details seem to be added with little concern as to how they relate to the description of the process or the flow of events. At the conclusion, the reader is likely to wonder what the main point or purpose of the paper was.

### 4. Ideas

The ideas presented in a paper reflect the quality, uniqueness, and creativity of the thinking involved in the development of the paper. The selection of the topic, the choice of point of view, the selection and

shaping of details are all involved in the presentation and development of the ideas.

High (5 or 6) The author has selected an interesting, engaging topic, has selected appropriate and meaningful ideas to discuss and describe, and may have dealt with the topic in a unique, creative fashion. Humour, interesting figures of speech, or the like, may be used or attempted in describing the process or relating events. An interesting point of view may have been selected.

Middle (3 or 4) Though the ideas presented in the paper are generally sound, they do not reflect a unique or creative point of view in dealing with the topic. No attempt has been made to employ humour, interesting figures of speech, comparisons or the like in order to make the paper more interesting or lively.

Low (1 or 2) The ideas presented do not reflect sound or creative thinking. Not only is the paper lifeless, but the ideas do not congeal as a whole and seem to reflect mental wandering rather than logical or creative thinking.

#### 5. Choice of Detail and Elaboration

The details chosen by an author, how particular ideas within a paper have been elaborated, and how real and vivid the writing is can make the difference between a listless, lifeless paper, and an exciting, engaging paper.

High (5 or 6) The details chosen by the author are appropriate to the description of the process or the telling of the story, and are elaborated in such a manner as to be interesting to the reader without getting carried away. The words, phrases, imagery, figures of speech, etc. seem to have been selected and presented in such a manner as to make the process, events, or description alive, real to the reader, and clear.

Middle (3 or 4) The details chosen seem appropriate to the description or story but, at times, the writing seems to lack life. The elaboration may not allow the reader to visualize the process or events adequately and may not be clear to the reader. Though adequately described, the process or story may lack the life that vivid writing and expression could give it.

Low (1 or 2) The details chosen by the author do not seem appropriate to the purpose of the paper or to his/her audience. The author has not appropriately elaborated the process or events and the writing is lifeless. The expression used by the author not only is not vivid, but may be boring and unreal.

#### 6. Sentence Structure

No hard and fast rules can be set down for sentence structure. At times, a variety of sentence structures is appropriate to create and maintain reader interest. Sometimes repetitive patterns can create a desired

effect. Sometimes, short, choppy sentences are appropriate to the topic and discourse; at other times, long, elegant structures are appropriate.

High (5 or 6) A positive effect is created by the author in the use of sentence structures. The writer seems to have control of a variety of structures and employs them effectively in communicating.

Middle (3 or 4) Although the writer seems to have control of a number of sentence structures, at times the structures are ambiguous or clumsy, or the writer may not have taken advantage of opportunities to create a positive effect in varying or repeating sentence structures.

Low (1 or 2) The sentence structures are little more than simple sentences; a small number of structures are repeated throughout the paper so that the paper becomes boring or predictable. The author seems to have serious difficulties in presenting effectively constructed sentences.

## APPENDIX E - ANALYTIC SCALES TO ASSESS THINKING

### Analytic Scales to Assess Higher-Order Thinking

These scales were used to assess the growth of higher-order thinking as demonstrated in the students' dialogue journal writing and test writing samples. These scales were developed specifically for this study.

### Analytic Marking Scales to assess Thinking as demonstrated in Writing

This analytic scale is designed to assess the student's level of thinking as demonstrated in both dialogue journal writing and test writing. This scale will assist the assessor in evaluating students' ability to:

- a) organize thoughts;
- b) exhibit logical reasoning skills;
- c) display an effective expressive writing style; and
- d) write quality responses to material being studied in content classes.

A score of 1 to 6 should be assigned to the piece of writing for each of the above categories. A brief description of each scale is provided to insure consistency in marking all entries being scored.

5 or 6	High Scores
3 or 4	Average Scores
1 or 2	Low Scores

The descriptions given for each scale are written in fairly general terms, and the wording selected may not be exactly applicable to each type of response being assessed. It may be necessary for the assessor to interpret the description creatively and attempt to make it fit the selection being assessed, while remaining within the general intent of the original description.

It is assumed that all four scales will be applicable to the higher-order thinking responses that will be assessed during this study. There are, however, so many different possibilities regarding the direction that student responses can take that it may be impossible to apply all of them in every case. If that happens, the assessor is advised to either apply the scale creatively, or just ignore the scale which is not applicable for the particular piece of writing being evaluated.

### 1. Organization of Ideas

This section deals with the manner in which the student organizes and expresses ideas in writing. It is expected that the topic or problem to be discussed, and the format selected by the student to express his/her thoughts will be introduced close to the beginning of the written piece so the reader will know what to anticipate as he/she reads. A sufficient number of relevant supporting details need to be provided to fully develop the writer's thought pattern. Some kind of concluding statement should be present which clearly re-iterates the writer's thoughts or opinions about the issue or topic presented.

High - 5 or 6 The writer states the problem, action, issue, or information being dealt with clearly and concisely. The reader can quickly ascertain what direction or approach the piece of writing will be taking. The writer quickly establishes a position, proposes a solution, predicts an outcome, issues a challenge, applies the knowledge being acquired to personal experiences in meaningful or creative ways, or makes an evaluative statement about the issue or information being presented. The writer provides ample reasons, examples, or details to support the major thesis of the response. The piece of writing should be brought to a formal conclusion, probably with an evaluative or opinion statement as part of closure.

Middle - 3 or 4 Most of the elements listed above are present in the response, although the organization of the material may not be as clearly established. Some important information may be missing from the response or else all the information provided is not relevant or pertinent for the position being established. The reader probably knows what position the writer is trying to take, but the direction of the response leaves that position unclear or unresolved in the reader's mind. Closure may be weak.

Low - 1 or 2 The problem and proposed solutions, or the direction of the written response is probably not clear to the reader. The piece of writing may be simply a collection of ideas or bits of content information with no clear focus or direction established. The student may have stated the problem or position adequately but made no attempt, or an unsatisfac-

tory attempt, to resolve or explain it. The writing may be clear and well organized, but the ideas are irrelevant and the writing does not attempt to answer the question asked. A sense of formal closure may be missing.

## 2. Logical Reasoning

There should be evidence that the writer's thoughts follow a logical sequence or pattern, and are all related to the stated problem or issue in a coherent manner. The ideas presented should be relevant, sensible, and believable, and the development of the writer's position should show evidence that the student's ideas are based on reasonable and logical assumptions and correct information.

High - 5 or 6 The thoughts presented follow a logical sequence and are written in a way which gives the writing coherence. Statements made by the writer to support the main position or idea of the response (eg. if... then... statements; cause and effect relationships; I think... because... statements; etc.) are based upon sensible reasoning. The writer's ideas are possible and believable and are based on reasonable assumptions and correct information. If logical reasoning is not possible, the reasons for this will be clearly stated.

Middle - 3 or 4 The sequence of the ideas presented may be somewhat confusing, although the ideas themselves are fairly well stated. Lack of coherence may give the writing a "chopped up" feeling. The writer's reasoning may be questionable for some segments of the answer, but the total response still displays evidence of believability. There may have been an attempt made to establish logical reasoning or thinking but the student abandoned the attempt prematurely.

Low - 1 or 2 Thoughts may have been recorded as simple statements with little, if any, attempt to substantiate them. Inadequate sequencing of ideas and coherence will prohibit the development of a feeling of logical progression as the piece is read. Logic statements may in fact be wrong, with little or no relationship between the two elements of the statements. There may be no evidence at all of logical reasoning in this piece of writing, although it would have been possible and advisable to develop this focus as part of the genre presented.

## 3. Style

The style of writing should be appropriate for the discipline, for the type of response being attempted by the student, and for the age/grade level of the writer. The style should be expressive, persuasive or argumentative rather than narrative, with evidence that the student is processing, applying, personalizing, evaluating, questioning, or challenging concepts being studied or discussed. Creativity in presentation, or humour will need to be judged for appropriateness -do they add to or distract from the reader's ability to understand and appreciate the main position of the paper? The style should portray confidence and assurance that the ideas being presented are valid and acceptable.

High - 5 or 6 The style of writing and general presentation of the ideas is above the age/grade level and appropriate for the discipline as well as for the type of response being attempted (eg. a formal argument vs the informal development of a personal opinion). There is evidence that the student is not just relating information, but processing that information and trying to apply it in a specific way for a particular reason. There should be some personalization of the knowledge being processed, and evaluative statements will likely be present, possibly as part of a persuasive or argumentative focus. There may be some evidence of creativity of thinking or humour to catch the reader's interest, but it must be appropriate for the writing genre being used. The student's writing should portray a reasonable amount of confidence.

Middle - 3 or 4 The style of writing and general presentation of ideas is at the age/grade level and acceptable for the discipline as well as for the type of response being attempted. Some of the information presented may be a simple statement of facts, but there is some evidence that the information is being processed and the student is attempting to apply it a specific way for a particular purpose. The student may not be attempting to relate the information to personal experiences and to evaluate the information; it may be a simple statement of ideas and concepts, although some evidence of persuasion or argument will likely be present. There will probably be no creativity of presentation or humour, or if there is, it will possibly be used inappropriately. The student's writing should portray a reasonable amount of confidence, although statements that display some sense of unsurety (eg. I think...; it seems that...; it appears to me that...) may be evident throughout.

Low - 1 or 2 The style of writing and general presentation of ideas is below the age/grade level. The genre selected may be unacceptable for the discipline or for the type of response being attempted - if the genre is appropriate, it may not be properly developed. Much of the information presented will be simple statements of facts, with little or no evidence that the information is being processed and applied in a specific way to accomplish a particular purpose. There will likely be little evidence that the information has been personalized in any way. The writing will probably have an aura of hesitancy and insecurity with regard to the ideas being presented.

#### 4. Quality of response

The student's thinking as demonstrated in the written response should be mature and the quality of the information and ideas presented should generally be rated as high for his/her grade level. The written response should contain a blend of information and ideas presented in the content class and ideas and perspectives which developed through personal experiences and through the processing of the information presented in class. The writings being assessed should be representative of a variety of genres. The quality of response in each of the areas to be assessed - undirected journal responses, prompted journal responses, and test situations - should become progressively stronger, and expectations will need to be adjusted upwards as well. There should be evidence that the



student is confident in his/her thinking, and comfortable with the manner in which he/she has chosen to present the position.

High - 5 or 6 The student has made good use of the information given in the course to develop the writing, and has attempted to add something from his/her own experience to personalize the response. There is evidence that the student has a good understanding of the concepts being studied and has chosen an appropriate vehicle for discussing or applying high quality ideas in a mature manner. The student may question or challenge the ideas of others in a confident manner. A variety of genres should be presented over time, and the assessment of quality will depend upon the degree to which the teacher has been pushing the student to think in this manner during the journal writing experience. Generally, the student will have fulfilled the stated purpose of the response by substantiating an opinion with an appropriate argument, dealing with cause and effect in a logical manner, applying knowledge in a creative way, or evaluating a situation with appropriate reference to relevant incidents.

Middle - 3 or 4 The student's thinking and the quality of ideas being dealt with are not as mature as might be expected at this point in the study. He/she may have made good use of information presented in class, but little, if anything, has been added from outside of the classroom to enrich the response. A reasonable understanding of concepts presented is evident, but there is little in the way of questioning what was studied. The student is probably using familiar genres as often as possible. He/she will have fulfilled the stated purpose reasonably well, but the position taken will not be persuasively or confidently presented. The student will likely show more comfort in handling prompted responses than undirected responses and test questions.

Low - 1 or 2 The student's thought processes and the quality of ideas being presented are immature. The response may be a series of statements taken from class, with little evidence of an understanding of the underlying concepts. It may also be simply a personal reaction, with no information to support the reaction. The genre being used is probably one which he/she chooses to use as often as possible. The student will probably not have fulfilled the stated purpose of the response in a manner which is acceptable for his/her grade level expectations.

## APPENDIX F - STUDENT JOURNAL ENTRIES:

### Journal - Grade 4 - Student #1.

1. How do you think structures, functions and materials are related?
2. When you make something why is it important to think about structure, function and material?

\* 1. I think structures, functions and materials are related by, you need the material to make the structure and the structure to operate the function.

2. It is important to think about structure, function and materials because you have to think of what you are going to make the structure from. How your going to operate the function from the structure.

*Student X: You do need to think about structure, function and material when making something. Which of these should you think of first when you make something? Why?*

\* You have to think about structures first because you have to think about how your going to make it and with what. So second it would be material because you have to know what to make it of.

Then function because you have to know what it is used for.

*Student X: How do you know how to design something if you don't know what it will be used for? What do you need to know before you design a structure?*

\* You first have to know what the object is used for and next you have to know what the material is strong.

*What do you have to think about before you choose materials?*

# After you know what the object is used for you have to know the structure and then you have to choose the material.

*Student X: What were some problems you and your group had in building the treehouse?*

# Dear Mr. X  
Some problems we had during building our treehouse were, M

wanted it different but me and E wanted it even differently. So me and E started doing it the way we wanted it. So M agreed with us and that was the only problem we had. And thats that.

*Student X: Did you have a problem with designing the structure using only drinking straws and pins?*

# Dear Mr. X:  
Yes we had some problems with disigning our tree house first we did something and it just wanted to fall down but E thought of a way it could work and thats how it worked.

*Student X: When we talked about structure and function, did you have any idea how they could be related to animals? How do you think structure and function relate to you as a person?*

# Well this question is hard to answer but what I think, a person has strong mucsles to move its head, arms, legs and all sorts of other things that mucsles are good for.

#### A Person

##### Function

breathing  
eating  
talking  
sleeping  
running  
lifting  
thinking  
fighting disease  
bending

##### Structure

strong lungs and heart.  
strong jaw and teeth  
strong vocal cords, tongue and lips  
your brain to dream, your eyes to close  
strong legs lots of energy  
strong mucsles and arms  
good brain to think out questions  
do lots of exerice to burn the caleries away  
strong back and mucsles. Good spin to bend.

*Student X: What can you tell me about function, structure and material that you didn't know before we started this unit?*

Dear Mr. X

I almost knew nothing when we started the unit SF+M. I didn't know what funtion meant neither Structure. I didn't know what to think before making an object.

Love Student X

Journal - Grade 4 - Student #2.

*How do you think structures, functions and materials are related?  
When you make something, why is it important to think about structure,  
function, and material?*

\* I think they're related in the way of them all being apart of one thing.

Example - A chair, structures, how it's made, function, it's used for sitting on, and Material, its made of meatle, screws, and plastic.

It is important to think about Structure, function and material, when you make some thing because you need to know how it's made, what it's made of, and what it's used for.

*Student X, you're right. Structure, function and material are all part of the same thing. If you don't think about any one of them, then the whole thing will fall apart. If you make a chair, but you use paper and glue for materials, it will not have the function of being able to be sat on. When you make something, which should you think about first, material, structure, or function? Why?*

\* First you need to think of function, (what it is used for) so that you will know what your making it for.

Then you should think about the materials so that you'll have what you need to make whatever you are making.

Then after you know all that think about structure, (How it is made) so that it will be build properly, look good in the end, and you will feel good about it.

If something is not build with structure, function, and material, then it may fall apart and you would have to build it over and over.

*Student X: Why would you think of materials before structure? How would you know what materials you'd need without knowing the design?*

\* I don't know. Please switch them two around.

*Student X: When you were working on the structure to hold pencils, what kinds of things were you thinking about as you were working on the project?*

I was thinking about what my grandma and grandpa were doing in Brownsville Texas.  
Well really I was thinking about how it would look, and how I would make it, and also what I would use to make it. Why?

*Student X: It's interesting and important to think about what one is thinking about when one is deciding how something should be made. By the way, what were your Grandma and Grandpa doing in Brownsville Texas?*

Oh, they were on a vacation for two weeks. When we picked them up from the air port, they said they had a load of fun

*Student X: You are an engineer. You are supposed to check the safety of a bridge. What are you going to check and why?*

# I'm going to check the brige. Why? To make sure it's safe.  
No really I would check to make sure it would not fall in when a car would drive over it, and also, that water could drain off and would not flood the brige.

*Student X, Would you check for strength? If so, what kinds of things would you look at?*

# Yes, I would check for strength to, I would look for craeks, and that the railings would not fall off esily or at all.  
Why?  
Pins and Needles

There wen't many problems in our group. Exsept that we poked our finger with the pins, and that we all didn't think it would stand. But either than that it went smothly.

*Student X: How does structure and function relate to the human body?*

<u>Function</u>	<u>Structure</u>
balance	2 legs + toes
good base	Feet
keep body upright	muscles + bones
hearing	ears
seeing	eyes
speaking	mouth
smelling	nose
breathing	lungs
protection	skiny finger + toe Nails
keep face shape	teeth jaws
chewing	mouth teeth jaws

*Student X: What do you know about function, structure and material that you didn't know before we started this unit?*

# Now I know that what something used for is called Function. Something that is called how its made is called structure and I knew what material was. I also realized that nothing would be what it is with out these 3 things. By the way I've been noticing that you've been making sience more interesting. I'm really sorry for all the rudnes I've done.

Journal - Grade 5 - Student # 1.

\* To day we talked about why people like us live up north. Well if so many people live up to mine for money why don't more people from here in the south live up their.

*Even though many people do live and work up north for the "good money", I guess there are only so and so many jobs. If too many people moved there, there would not be enough jobs. Why do you think the pay is so good for most jobs in the north?*

\* Well because their's mining up north and for mining you get pretty good money. Your right if there was to many people were up there, there wouldn't be enogh jobs. How do you think the people like us you who are up there found out that there was alot of good mining up North. Today we wathed a movie about clothing, shelter, and food.

*Scientists discovered that the north was rich in metals and minerals, so many mines were started. Mining is not the only job in the north. Construction, teaching, nursing etc. all go on up north too. Why would a teacher or nurse make more money at their job in the north than in southern Canada?*

\* Well maybe because they are more important like teachers for kids and nurses for any people. Today we watched two film stripes about people and how they live up North. Why do you think Inoits still live up their, because they could have better houses down here and it's not so cold.

*Life does seem hard in the north, and yet many people live there. Sometimes we wonder why. Do you think some people might wonder why we live in Plum Coulee? Who?*

\* Well I think people might wonder why we live here but if they do why should they, Plum Coulee is a good place to live I think maybe other people doen't. Today we looked at two mining film stripes the first one was about what they all have to do at a mine. would you like to work in a mine like underground don't you think it would be scary?

*I agree that Plum Coulee is a good place to live, and I'm sure the people up north would say the same about their area. Most people like the place they know best.*

*Mining does seem dangerous and scarry! Some of the mines we saw were open-pit mines, why wouldn't they make all mines open rather than going underground?*

In Thompson how did they find that they would have good mines. Because some soil miet not be as strong.

*I think they make test-holes to see if an area is good for mining. Your answer is good, open-pit mining also has to do with the depth of the ore.*

Today we read in our text books. Don't you think people who worked with cutting down tree's wish they could use the tools lumber people use now.

*That's an interesting question. How do you think new logging tools were invented? Who would think of these new inventions.*

# *The people who invented these tools would have to think how they could make tools that would make the job easier. Today we talked about how the climate is different aroud the ocean. How do you think people figured out that it made a difference in climate if your beside a ocean or not?*

*You're right. Often people doing a certain job think of ways of making it easier. This is how new inventions are often started.*

*By keeping track of temperatures and weather, and then comparing "notes" people would discover that oceans can make a difference to climate.*

*What would it be like to live where the sun stays up for weeks in summer and never comes up for weeks in winter?*

# I would hate it think of it, in winter no sun for weeks. Today we were resurching on the Ice Age and stufe. Do you think it would be alot colder while the Ice Age?

*It would have been cold enough not to let the ice and snow melt. The only way glaciers can form is if it snows more than it melts.*

# Today we talked and read about houses and buildings that were lifted so they wouldn't sink. I wouldn't like to live way up north. Would you like to live way up north?

*I think it would be an interesting place to visit but I'm not sure I'd like to live there.*

*A lot of oil + gas have been found in the north, how do you think it got there?*

# The animals died and the bones after a while it turns to oil and gas. Today we did some research on the people in the north. Do you think people in the north are scared to move in southern Canada because they were born in the north?

*I think you might be right. I hope you enjoyed our unit on the north and learned some interesting facts.*

**Journal - Grade 5 - Student # 2.**

\* Today we sort of made a border of the North. We talked about people who live and why they live up there. Why didn't they make a border of the north?

*I guess it is very hard to say where the "north" really starts. As you move north things change gradually. Do you think there might be some people who think we live in the "north"? Who?*

\* I guess people who consider us the north, we consider them the south. People in the north, must be sort of like the people we saw in the movie. They probably are like the Japanese. They have to wear warm clothing. What kind of houses can they build with barely any trees?

*Good question! With only snow + ice in the far north I wonder where people live. That would be a good topic for research. Do you think the way people live in the north has changed over the years, like it has for southern people?*

\* Today we saw two film stripes about the people in the north. The life of the Eskimo might have changed a lot in the



years. They might use oil to cook their food instead of animal fat. They might not depend on the animals as much as they have. Their houses might be like ours now because we might have shipped wood to them. Would their clothes change to something like ours? Would they still depend on the caribou as much? Have their homes become bigger and have more rooms?

*Some of the changes you mentioned are true. Some groups of Inuit may have changed more than others. If they used some of the more modern things, their dependence on the Caribou would be less.*

Today, we saw in our film strips how they mine nickel, and iron. It is a very complicated system. I always thought that they mine big chunks of nickel and iron. Mining nickel underground would be very scary. What would happen if it caved in but didn't hit anybody. Would the whole mine cave in? Iron would be different if they did an open mine, then I wouldn't mind it. I wonder how they know where nickel or iron is?? How hot do you think they would have to heat the furnace to melt the metals??

*The mining process is complicated. I guess that's why it's so expensive. It's very dangerous too. Miners have always taken big risks and often you hear of miners being trapped underground after the mine fell in. Open-pit mining would be much safer. Why would they not always make open-pit mines rather than underground ones?*

*The temperature of the furnaces would be an interesting fact to research.*

That's a tough question to answer. I don't know if I can answer that. I guess they wouldn't always make open-pit mining because if they would go around a piece of earth not ore and broke loose. I tried but that's probably not the one you're looking for. They say in the text that one day women will mine not just men. In Thompson, Mr. Wiens knew the prices of food was going up, then in other places it was a lower price. Why wouldn't the miners let women interview to find out if they let men?

*Your answer is good and shows thought. It also has something to do with how deep the ore is.*

*Why do you think women are not involved in mining as much as men? Is this fair?*

Maybe the men think that women don't like getting dirty, and they might think that women are supposed to stay home to

cook and clean. I do not think this is fair because maybe the mother would like go out and work for a change. What would happen if all the trees were cut down??

*Do you think women would be able to do mining work?*

*If all the trees would be cut down there would be some problems, can you think of some problems it would cause?*

Yes, I'm sure women could do mining just as well as men. If all the trees were cut down we would breath in carbondioxide, because the trees exchange carbondioxide for oxygen. The tempeture of those two towns would be different because one of the towns is on the ocean and the ocean makes a differance because it is like a pool under the sun allday and it cools of as soon as the sun goes down.

Why does water always do this?

*Water holds its temperature longer than air because it has more mass. Rocks and bricks do the same thing. During the day a rock may feel cool, and in the evening when the air is cool, the rock will feel warm.*

*What would it be like to live in the north where the sun stays up or down for weeks?*

# It must have been very dull. I wouldn't be able to sleep if the sun was up all the time, and I might sleep all day if the sun was down all day. There is still some glaciers. About 10% of the earth is still covered with ice. Glaciers in the ice age carved our land. With them, they sweapt huge boulders. Where there vikings in the ice age or did they come later?

*I agree, sleeping would be a problem if the sun stayed up all night!!*

*The Vikings would have come after the Ice Age.*

# How could there be spring floods if the warter only goes up to the edge of the town?? Would the utilidor be on the road if to be hooked up to other houses? I would not want to live way up there because, I couldn't have a garden and also because we wouldn't have our pipes under ground and a basement.

*Many things would be different living up north. The utilidor would have to go to each building so it would be seen all over town. I guess it would be beside the roads.*

*A lot of oil + gas has been found up north. How do you think it was formed there?*

# The oil was formed when dinosaurs walked the earth. There were animals in the north, and when they died, their bones were buried under the earth. After thousand of years their bones turned into oil and gas. The people of the north wish that in the future, they could have plactic bubbles over towns so that all year round they can have warm climates and grow crops under the bubble. Maybe some of the food will be made by some chemicals.

The people still use chac's for fishing and hunting.

*Many things have changed in the north. It will be interesting to see how the future will affect the north and its people.*

Journal - Grade 7 - Student #1.

\* I think a resource is something like water, food and shelter ect. Things that we need to live.

I thought it was interesting that indians a long time ago knew there was fuel on thier hunting ground. All along they could have used it as fuel but they didn't think of it.

*You do have the right idea of what a resource is, student X. It is also interesting to think about our past and how the Indians you mentioned knew the fuel was something special. Because people are naturally curious and like to find out new things, we gradually make new discoveries like what to do with fuel resources. This is an important characteristic in humans that help them advance in technology and discoveries.*

\* Water is a wonderful resource. It can be used over and over again, it goes in a giant cycle. If you water your garden it helps the plants grow. Then the water evaporates to be used again.

I often think about how great it would be if I would invent a vehicle that ran on water. As it ran the water would evaporate and the fuel would be recycled. It wouldn't cost you anything to fill up your car, and it wouldn't polute the earth.

The planet could not survive without water. Plants, animals, and people need it to live. A person couldn't live without water for more than two days.

*Yes, water is a wonderful resource. People are always trying to think of new ways to harness its power. I like the idea about the vehicle run by water. Would this be a modern version of the steam engine or a different way to generate power with water? Do you think people would then set up water stations to refill your car and start charging a fee for water?*

\* It's really amazing how something like sand can be turned into something like glass. I would like to see how they do it.

Although diamond is just a mineral it can be really worth a lot of money. The reason for that is because it is rare and people like how it sparkles.

Gold is another metal and it too is worth a lot. Again, because it's rare and is really beautiful.

*A diamond is also of value because of the shape in which it is cut, how clear or perfect it is, and because of its extreme hardness. There are certain types of drills which have diamond-tipped bits so that they can cut into very hard material without getting dull. Perhaps you can think of some special uses for something as hard as a diamond.*

# *Day by day rainforests are being cut down. The lumbering industry should leave the rainforests alone and create a designated area to plant new trees, let them grow big enough, and then use them for lumber. Recycling saves a lot of trees and a lot of rainforests. And since you can't use the soil of a rainforest once it's cut down why not just leave them. The soil is useless, you can not grow anything in it.*

*[Here the student has inserted a diagram indicating "Topsoil - gray to black, contains humus; Subsoil - red brown or yellow, clay; Weathered bedrock - contains pieces of rock; and Bedrock - Parent Material" and a note - "see p.62 for actual picture"].*

*In your last entry you talked about the cutting down of rainforests. You asked why people couldn't just leave the trees standing and save the soil. Unfortunately, trees are also a valuable resource which is slowly disappearing. People's needs were trying to be met too quickly in some places and too many trees were lost. Perhaps you can come up with some ideas for the future to get a substitute for wooden building materials.*

# *If the gas were to run out, no one would be able to get around. Unless they would have a solar car or some sort of car that ran on water. Slowly as the fuel would disappear the gas prices would go really high. The planes would not be able to fly and you could not go to any far away places, not as fast as you could with an airplane anyway. The environment however would probably be a little cleaner. With no cars burning fossil fuels, there would be a lot less pollution.*

## Management of Resources

### 1. Managing Nonrenewable Resources

People have to start managing some of the nonrenewable

resources. Designing new cars that run on less gas and buildings that can be heated with solar power. In the future more coal and atomic power will be used, as resources get scarcer we have to find substitutes for them. Scientists are trying to harness the power of wind and tides.

## 2. Water Management

A lot of people used to think, that in areas that have more water flowing they should build big dams. But if the dam should break it would be a big flood that would ruin a lot of crops and homes. If you build a smaller dam it would not be so bad, if it would break the impact of the water would not be so bad. Although the amount of water.

*I see your point about smaller dams, but the bigger the dam, the more water rushes through. More water rushing means more power can be generated when a dam is used for hydro electric power. As far as water management goes, when a dam is used for this purpose only and not for power, it is better to build smaller ones as you said. You were right about the damage potential for this type.*

### Journal - Grade 7 - Student #2.

Dear So. St. Journal,

*This chapter, is it only going to be about resources of the earth? Why do we have to learn about this stuff? What is it going to help us in later on life? Like, I don't want to be an astronaut or anything.*

*Bye.*

*Yes, this chapter will be mainly about the resources of our earth. Please raise your other questions during our next class and we'll discuss them together. Then write your answer in your next entry.*

\* Dear So. St. Journal,

*If water is a recyclable resource. Why isn't gas? Does gas not have anything to do with water. Do you know why the water is so unevenly distributed around the earth. If one place of the earth does not have very much water how can water destroy crops? In the textbook it says that floods often occur in river valleys. Where is a "river valley"?*

*From my last entry. My answer is so that we know that the world is not the same all around us and that we know how to prepare ourselves. Is that right?*

*Bye*

Yes, that's a good way to look at it.

You asked about gases and water in the beginning of your entry, Student X. Gases are constantly being used by some things on the earth and given off back into the air by others. People take in Oxygen (O<sub>2</sub>) and give off carbon dioxide (CO<sub>2</sub>). Plants take in CO<sub>2</sub> and give off O<sub>2</sub>. Water can become a gas when it boils or evaporates into water vapor in the air.

Water is unevenly distributed around the earth due to its location. Places near the equator are hotter than at the poles. Places near large bodies of water are moister than those on the mainland. Other factors causing different climates are also responsible.

\* Dear So. St. journal,

If salt is so important how did they figure out that it came from rocks? What do these words mean?

metallic -

inorganic -

galvanize -

nonmetallic -

On page 60 bottom picture what are they trying to prove to us there. Why does it have to be in the middle of the water  
A few times back, I still don't get what cloves are. Can you explain?  
Bye.

*Is there a way you can find their meaning student X? [written by the list of words above]*

*In regards to your first question student X, salt is a mineral that has been discovered both underground and in the oceans. The uses for it would have been found out only after they learnt where to obtain it.*

*The picture on p. 60 is of an oil rig that has been built many miles offshore in the Atlantic Ocean. Oil has often been discovered below the ocean floor. The oil rig is a huge drilling station used to remove the oil.*

*A clove is an unopened bud from a tropical type of evergreen tree. It is used as a spice in foods. At one time, the oil squeezed from it was used as a medicine. It was very popular before the time of refrigeration because meat had to be preserved with salt. Clove spice helped improve the taste and became a valuable resource.*

\* Dear So. St. Journal

Hi. What do they mean that the world is just 15 centimeters from starvation? Does it mean that if we wouldn't have rain for quite some time, then all our crops would die? If we would not have rain? Lets say, for 3 straight months it would be very hot outside what would happen? Would our soil dye out? If the soil would die out would the whole world die? as

in us? I think that most things and people would die because we would not have any crops and then we would die of starvation. Would'nt we?

Abot the drawn picture on page 62., Why are there so many different layars? Is it from erosion? If it is why is it so seperated? Bye.

[Here the student has attempted a drawing which looks incomplete. Beside it is printed - "soil seperation look back in textbook on page 62"]

*On average, there is about 15 cm of topsoil on the earth's surface. This is needed to grow food. If the 15 cm was taken away, we would starve. The reason the book suggests this is to show you the amount that is on the earth. We have learnt how soil moves from place to place through erosion, so we know that it doesn't really disappear.*

*I'm not quite sure what you meant by soil dying out. Lack of rain could certainly reduce crop production in an area, but because of the water cycle, if it doesn't rain in one area, the moisture will move to a different area and rain there. Water is recyclable and therefor we probably won't run out.*

*The different layers have been caused by weathering, [something unreadable] and time (your question about the diagram). The farther down you go on the diagram, the harder and more packed the layers become. In the future, the top layers will be covered and they, too, will become bedrock layers.*

# Dear So. St. Journal,

*Now I understand why the drawn picture is so seperated.  
(page 62)*

*How do people that put facts + estimates in this text book know that the crude oil will be gone by 2025? How do they estimate it? Have they dug up the whole world to know this? No. They haven't. Or have they?*

*Then on to pg. 66, the "pie" graph at the top of the page, what kind of energy are they proving to us? Then going to the bottom square at the bottom of the page, how much is in a megaliter? What also, do they mean by megaliters per day, is that how much the province or Territory uses? or Is that how much they produce every day? Why is there such a humungas difference, in between so many of them? [The words "produce every day" were circled and beside them was written "read the title"].*

*On page 68, top left hand corner of the page they say that the worlds resources are unevenly distributed. Why is this? Why are some lands richer in soil then others? Is Canada in so much debt from the oil, natural gas, coal, and gasoline that we use from other counterities? or Just for "other reasons" (uses)? (You don't have to explain the other reasons) (uses)*

*Now to the question that you put on the board.*

Q. What would happen if coal, oil, natural gas (and gasoline) would run out in the future?

Think about - transportation  
- environment  
- airplanes

A - Transportation,

If natural gas, coal, oil and gasoline would all die out, then we would not be able to use our vehicles. So they (car making people) would have to make solar powered vehicles or some other incredible thing.

-environment,

If these certain things would run out, we would probably cut down and use trees for heating houses. We would also not have any oil lamps. Aren't trees also becoming more scarce?

- airplanes,

If this stuff would all "go away" as in disappear, our airplanes would also not drive. Unless they invent something else. Then people that are real sick and need a doctor fast, would have to have a closer hospital that can help them.

I think I've written enough  
I don't know what else to write!  
Bye

Dear So. St. Journal,

The nonrenewable resources are things that can not be reused. Do scientists believe that there is anything that we can do to get these nonrenewable resources renewable resources? I don't think so, because it's just like a disposable diapers, a baby can't reuse them again.

Bye.

You are right. Many things cannot be recycled. Perhaps in the future new uses will be found for things we thought couldn't be recycled. Start thinking now Student X!

In regards to your previous entry, people can predict when we will run out of crude oil by comparing how much we have used in the past with how much we have left. As far as scientists can tell, the majority of the world's oil supplies have already been discovered. For many years petroleum companies have had research teams testing for oil sites all around the world.

The circle graph on p.66 shows the 3 ways Canada uses energy, and how much is used in each area.

A megalitre is one million litres. Mega means a million. The reason why there is such a big difference between provinces is that there just happens to be more crude oil in some than in others. This is also



the same answer to your next question about distribution of the world's resources and richness of Canadian soil as compared to other places. It just happens to be that some places are better equipped and have more things than others.

Journal - Grade 8 - Student #1.

Tell me everything you know about energy, including what it is, what forms it comes in, its uses, etc. Include any questions or concerns you have relating to energy and our earth.

If there is time write about how you use energy in your daily lives.

\* Energy comes from the sun, dams, + hydro plants. Energy forms electricity, light, heat.

Dam - in a stream or river, water rushes through the dam runs the water turns the generator, which makes electricity that runs thorough hydro wires.

question - Does electricity harm the ozone layer? I was just curious it helps to know I know it might harm plant life + animals

Wow, I can't beleive I wrote all this.

How I use energy. Let's see. In the morning I turn on the tap. Doesn't it take energy to bring water up? I turn on my curling iron my alarm clock, my light, the fridge, the microwave, the freezer the car, you know drive to school. Blow dryer - almost everything.

Sorry it was messy I will make it neater next time.

Your right, we use energy regularly in our daily lives. Often we don't even realize it. How about the Effects of Heat Exp.? Can you make some connections to what you do at home the way you did above.

As for the ozone layer, I am unsure about what you are asking. Do you mean does electricity in the air, like lightning, harm the ozone layer or do you mean does the way we produce electricity harm it?

\* Is the effects of heat exp. the one we just did. Well if it is it makes things expand, like the copper wire, makes things rise, like the water and air (the drop of coloured water in the glass tube). I don't know if there is a conection between the exp. and the things I wrote on Feb. 3. Well would the tap be an example? The water rises into tap then goes into the sick or does it happen it a different way.

By harming the ozon layer, I mean by the way we make it.

What would bridge builders in Manitoba need to do to accomodate seasonal temperature differences? Comment at length about something you learned that you found unique.

The bridge contracts in winter and expands in summer. The builders leave some room for the bridge to expand so it doesn't fall apart??

Explain to me a little more I don't get it.

*What part don't you get? What you have written is correct. To allow for this expansion/contraction of the bridge, builders put in expansion joints. They look like giant zippers running across the bridge.*

Predict as many advantages and disadvantages that a solar home has compared with a home which has a heat pump. Explain why these are ad. or disad.

# Teacher X, Please don't give me such hard questions.

adv

no bill - sun power - free  
environmentally friendly - doesn't use resources (oil, coal, etc)  
heat pump might take up more room.

I don't know. I don't know anything about a solar home, much like the heat pump.

go next page - disadv. + question.

disadv.

cloudy days - no sun's rays to give the power  
If mirror wrong, hot summers - mirror reflecting rays into house.

\*Teacher X - One question - is there a battery that stores the energy (heat energy) from the sun?

*You have a good idea [written under the last disadv.].*

*Yes there is. It is called a photovoltaic cell (photo - sun light ; voltaic - volts). The "battery" or cell uses light to produce electricity. This electricity could then be stored in batteries. Where do you think cells like this would be used?*

*Do you think the government should offer an incentive program to encourage people to build or remodel their homes to use solar energy? Explain.*

# I think those cells are used in homes, in the science text it said in space, office buildings, probably in almost every building that has solar power. For your question, Yes I think the government should put up a program to encourage people to put in solar power because we want to save our natural resources. The sun will be around for about another 10 billion years. The resources will go yet but the sun won't! So I do think the government should put up the program

Journal - Grade 8 - Student #2.

Tell me everything you know about energy, including what it is, what forms it comes in, its uses, etc. Include any questions or concerns you have relating to energy and our earth. If there is time write about how you use energy in your daily lives.

- \* Energy is the power that moves things. It comes from the sun, + water. Heat is a form of energy from the sun. When water turns a water mill, it produces electricity for the generator in a hydro plant.,  
Solar power is another form of energy using light to make electricity. Energy comes in forms of heat, electricity. Energy is a force.

Your answer "Energy is the power that moves things" is absolutely accurate. A common definition for energy is the ability to do work; work meaning movement through a measurable distance.

Based on the results of the Exp. Effects of Heat on Matter, have you seen examples in your home/surroundings which support what you found?

What would bridgebuilders in Man. need to do to accommodate seasonal temperature differences? Comment at length about something you learned that you found unique.

- \* They would need to leave a little room at each end of the bridge for it to expand and shrink with the temperature.

Yes, these areas are called expansion joints.

Predict as many advantages and disadvantages that a solar home has compared to a heat pump home. Explain why these are ad. or disad.

# Advantages

1. More light in the house from wind. You don't have to use as much electricity
2. A house with a lot of windows tends to look better than one with fewer windows

Disadvantages

1. Have to work in summer to keep temperature down because sun will turn on the furnace and the house will overheat.
2. You'll have lots of windows therefore not as much privacy

Student x, if this were your home, how would you deal with prolonged cloudy and cold periods like we sometimes get in winter, that is what would you do to your house to accommodate these conditions?

Do you think the government should offer an incentive program to

*encourage people to build or change over their houses to use solar energy? Explain.*

# Yes, I do because fossil fuels are almost gone already, so after they are completely gone the world will have to switch over to a different fuel, which will be water, hydrogen, or solar power. It will probably be solar energy because scientists have not, as far as I know, come up with a way to heat a home with the other two. (Water and Hydrogen)

## **APPENDIX G - PRETESTS AND POSTTESTS:**

### **Pre - Test - Grade 4 - Student # 1.**

*1. You are an airport designer for a city. Using what you've learned in our unit on sound, where would you build the airport in your city? Why would you build it there?*

I would build the airport out of the city because if the jet would take off it would be really loud.

*2. How could you change the way a whistle sounds without changing the whistle in any way?*

To change a whistle sound on a train the way I would hear it is once the train comes closer the pitch would get louder because as the train approaches the whistle would get louder.

### **Post - Test - Grade 4 - Student #1.**

*1. You are a safety inspector. You are to check the safety of a 20 year old bridge. What would you check for and why?*

If they're are any screws loose because if there were the poles would fall down and the bridge would come apart.

*2. What would be the difference in function, structure and material when building a house in the tropics or building a house in the Arctic?*

In the Arctic you would have to mak an igloo out of snow blocks. In the tropics you would be able to make a house out of wood or sticks.

Pre - Test - Grade 4 - Student #2.

*You are an airport designer for a city. Using what you've learned in our unit on sound, where would you build the airport in your city? Why would you build it there?*

I would build an airport away from populated areas. Animals and people. I would build it there so that I wouldn't drive any one or thing out of its home.

*How could you change the way a whistle sounds without changing the whistle in any way?*

If its a whistle you blow in then all you have to do is blow more to make more vibrations and blow less vibrations and less sound.

Post - Test - Grade 4 - Student #2.

*You are a safety inspector. You are to check the safety of a 20 year old bridge. What would you check for and why?*

I would check for strength so that the bridge won't collasps. I will also check the railings so that they won't fall off. I would deffinetly make sure it's high off the water because you don't wan to drive [them under water.]

*What would be the difference in function, structure and material when building a house in the tropics or building a house in the Arctic?*

Well, in the tropics the material would be alot thiner and the structure would be so that there would be a few windows to open and close. The Function would be to let you stay cool and be comfertable. In the Arctic it would be exsactly the opiset exsept that it would still keep you comfortable.

Pre - Test - Grade 5 - Student #1.

*You are part of a pioneer family that has arrived on the Canadian prairies. You are travelling over the grassland with a wagon and 2 horses. What type of area would you look for to make a homestead? Once you find it, what are some of the things you would need to do first?*

We would need to find a good place to make our house. Make a barn and fence for our horses. Chop wood for warmth in our house, and for heating up food.

*Most of the people in the Canadian prairies live in the southern parts of the provinces. However, in southern Saskatchewan there is a large area of very light population. What could be some reasons for this?*

Their's not very good soil for people to farm on. And their's no very much rain so you wouldn't get a good crop anyway.

Post - Test - Grade 5 - Student #1.

*Hydro dams in the north supply the south with electricity. However, these dams often cause flooding and other damage to native lands. What do you think is more important, having electricity for the south or saving native lands from flooding. Write an argument for the one you choose.*

I think it's more important that the Native's get their land that's not flooded because it's not really fair if we're wreacking their land by flooding it because we want electricity. Yes I know it's nice to get electricity but that's like the U.S.A. flooding our land just for electricity and we wouldn't like that. So I think we should get our electricity from the Southren lakes in U.S.A.

*When people settle a land they usually try to find a place where it will be easiest to live. We know the north is not an easy place to live, and yet many people want to stay there. What might be some reasons for this?*

One reason could be that their grandparent moved to the north from Europe or Asia and their parents live their so it could be that they just want to keep-going the tradition going, ore it could be that people that are Inuit want to live where their people live.

Pre - Test - Grade 5 - Student #2.

*You are part of a pioneer family that has arrived on the Canadian prairies. You are travelling over the grassland with a wagon and 2 horses. What type of area would you look for to make a homestead? Once you find it, what are some of the things you would need to do first?*

If I were a European coming to this land, the first thing I would look for, is a stream, or a river. The next thing I would look for is trees. If there is trees, there is sure to be animals that you can hunt. Or, if it was close to a town, then if I ran out of something I could go the store.

*Most of the people in the Canadian prairies live in the southern parts of the provinces. However, in southern Saskatchewan there is a large area of very light population. What could be some reasons for this?*

In Saskatchewan, there is a space were barly anyone lives. That might be because it might have long "Prarie" grasses. If you live in that area, your lawn might grow to fast for you to clip.

Post - Test - Grade 5 - Student #2.

*Hydro dams in the north supply the south with electricity. However, these dams often cause flooding and other damage to native lands. What do you think is more important, having electricity for the south or saving native lands from flooding. Write an argument for the one you choose.*

Saving the native lands is more important then having electricity. When the europeans came to Canada, they didn't have electricity. What if there is some important history in Northern Canada. It could be spoiled. Some people may have taken some seed and grew some plants that could grow over the ground and that could survive in the cold.

*When people settle a land they usually try to find a place where it will be easiest to live. We know the north is not an easy place to live and yet many people want to stay there. What might be some reasons for this?*

Some people might stay there because if the men work in the mines they could get good money. Some people may love the scenery. Or the animals that they may see if the go for a trip on snow mobile. They may like the weather.

Pre - Test - Grade 7 - Student #1.

*Predict what would happen to the people of Canada if another iceage would occur and huge sheets of ice would again cover our country. How would our lives change? What would happen when the ice would retreat back to the north again?*

I think most people would probably move further down in the states or somewhere else where there isn't a problem with glaciers. cities, towns, houses and everything else would be barried by ice.

If and when the ice would retreat I think slowly, one by one, people might move back. It would probably be a lot different, though.

*Name the type of erosion listed below that you think would have the greatest effect on changing the earth's surface and explain why. Use actual examples to compare and help explain*

- a) water erosion
- b) wind erosion
- c) glacial erosion

water erosian, I think would change the world the most because if glaciers were to melt, the water level would increase covering alot of land. New rivers would form and destroy farmland. Soil, rocks, even houses could be carried away. Dams would over flow and destroy towns and cities.

Post -test - Grade 7 - Student #1.

*Of the many resources on our earth, list the top 3 in order of which you feel are most important. Explain in detail and give evidense as to why you ranked them the way you did.*

- a)Water
- b)Soil
- c)Biotic

I chose water first because we could not live more than forty eight hours without it. We also need it to grow our crops. We also need soil because without it we would not be able to grow plants and crops. We need trees for oxygen and we need crops to eat otherwise we would starve. And we need Biotic resources such as cattle and other animals and plants we need otherwise we would starve to death.

*If the world would suddenly run out of fuels such as oil, natural gas and coal, what resource do you think could become an important substitute. Predict what the future would be like for products that used the old fuels, listing both advantages and disadvantages.*



Solar Power would become an important resource, so would wind and tides if we could harness the power of them. Cars, planes, boats and trains would be useless, maybe after a while they would pile up in junk yards. But with no fossil fuels burning the environment would be a lot cleaner. But without planes people would not be able to go to far away places as fast as they would with a plane. The trains would probably be steamengines again and maybe even the cars.

Pre - Test - Grade 7 - Student #2.

*Predict what would happen to the people of Canada if another iceage would occur and huge sheets of ice would again cover our country. How would our lives change? What would happen when the ice would retreat back to the north again?*

The ice sheets would break down buildings and houses. Many people would probably die, from starvation because you could not get into stores, and houses. You could also die from being not able to have warm cloths, because you could probably not get into a house or cloths store. You would freeze from being with the ice all the time. This would also affect the crops, and we would have rotton land. Then if the Ice would move back to the north than there would be alot of cleaning up to do. There would probably be many funerals around too.

The  
n  
d

*Name the type of erosion listed below that you think would have the greatest effect on changing the earth's surface and explain why. Use actual examples to compare and help explain*

- a) water erosion
- b) wind erosion
- c) glacial erosion

I think that the glacial erosion would do the most harm because it can knock down many mountains and the mountains would shift and forme earthquakes and any other glaciars could do it again and again and then we'd have many earthquakes, and many volcanoes would erupt. This would kill and damage many things. Water and wind would not do as much damage because it can not pick up as much at a time or move so much.

The  
n  
d

Post - test - Grade 7 - Student #2.

*Of the many resources on our earth, list the top 3 in order of which you feel are most important. Explain in detail and give evidence as to why you ranked them the way you did.*

Water  
Plants  
Gas

I ranked them this way because water is something you use every day. Plants you don't need as much because there are only a few plants you can use. Then gas, because we use it in our vehicles/ we don't exactly need them as much. See, we can walk everywhere, but gas for vehicles is much to our advantage. That's why I ranked them so.

*If the world would suddenly run out of fuels such as oil, natural gas and coal, what resource do you think could become an important substitute? Predict what the future would be like for products that used the old fuels, listing both advantages and disadvantages.*

I think an important resource would be trees and plants. They (people) would probably have to make and invent other things because of the old fuels. Things would also cost more if the old fuels were gone.

Pre - Test - Grade 8 - Student #1.

*A bed of sedimentary rock has been laid along stretches of the Pacific Coast of North America. These sediments have come from both river-carried silt and dead organisms that have built up over thousands of years. The crust layer holding these sediments is being forced deeper underground as the continent of North America slowly drifts westward. Over millions of years these sediments are carried close to the mantle layer of the earth.*

- a) *What will probably happen to these rocks?*
- b) *Under what circumstances might they next reach the earth's surface?*

These rocks will probably melt. they will probably reach the surface with an earthquake.

*Scientists offer indirect evidence for Pangaea and the Theory of Continental Drift. Besides the examples we discussed in class, develop two possible pieces of indirect evidence that would support the existence*

*of Pangaea, the ancient supercontinent. Be sure to explain how your example supports the existence of Pangea.*

No response was given for this question.

Post - Test - Grade 8 - Student # 1.

*Based on what you learned in this unit on the effects of heat on matter, how would you fasten a metal grip onto the round handle of a hammer of the same size? [A diagram of a labelled hammer handle and metal grip accompanied this question, with this further note - "inside diameter same size as outside diameter of hammer, so you cannot slip it on at the present time"].*

You could heat the Metal Grip so the metal grip would be bigger than the hammer handle. Slip the grip on and it should stay on pretty good if you keep at about room temp.

*Should we in Canada be encouraging people to use alternative fuels? Why? If we should encourage the use of alternative fuels, which one(s) do you favor? Why?*

Yes, I think we should use different kinds of energy because our natural recourse won't last for long and anyways it ruins our environment. All that pollution from the factories. What a mess. I think we should use Geothermal energy and solar energy because Geothermal energy is working all the time and when solar energy is out, like when it is cloudy.

*Yesterday I heard a speaker who provided considerable information, suggesting the depletion of our ozone layer may not be occurring at all, or more slowly than first expected. On a day to day basis, how concerned are you about our ozone layer and what may or may not be taking place? Why?*

On day to day basis, I was worried when Dad first told me. I put on suntan lotion even if I don't burn easily. Now that I heard that I'm not as worried. I know that are the same amount of caces of sin cancer so I don't worry about it any more.

Pre-Test - Grade 8 - Student #2.

A bed of sedimentary rock has been laid along stretches of the Pacific Coast of North America. These sediments have come from both river-carried silt and dead organisms that have built up over thousands of years. The crust layer holding these sediments is being forced deeper underground as the continent of North America slowly drifts westward. Over millions of years these sediments are carried close to the mantle layer of the earth.

- a) What will probably happen to these rocks?
- b) Under what circumstances might they next reach the earth's surface?

- a) The sediments, when they reach the earth's crust will probably melt.
- b) If it melts it won't reach the earth's surface.

Scientists offer indirect evidence for Pangaea and the Theory of Continental Drift. Besides the examples we discussed in class, develop two possible pieces of indirect evidence that would support the existence of Pangaea, the ancient supercontinent. Be sure to explain how your example supports the existence of Pangaea.

No response was given.

Post - Test - Grade 8 - Student #2.

Based on what you learned in this unit on the effects of heat on matter, how would you fasten a metal grip onto the round handle of a hammer of the same size? [A diagram of a labelled hammer handle and metal grip accompanied this question, with this further note - "inside diameter same size as outside diameter of hammer, so you cannot slip it on at the present time"].

Heat the grip in a pot of hot water. The grip will expand, then you can slip it on the hammer handle (the water will help slip it on easier). Then let it cool. (It will contract and become tight on the handle.

Should we in Canada be encouraging people to use alternative fuels? Why? If we should encourage the use of alternative fuels, which one(s) do you favor? Why?

I think we should because gas (the fuel we are using now) is almost gone. I think solar energy and water should be used, because they are both renewable and are environmentally

mentally friendly for the the people who worry about years a billion years away.

*Yesterday I heard a speaker who provided considerable information suggesting the depletion of our ozone layer may not be occurring at all, or more slowly than first expected. On a day to day basis, how concerned are you about our ozone layer and what may or may not be taking place? Why?*

I don't think about the ozone layer too much or care about it to much too much because I believe Jesus Christ will come back to earth before anything sereusly bad about the ozone layer will ever happen.

## APPENDIX H - STUDENT SURVEY RESPONSES:

### Student Survey - Grade 4 - Student #1:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

Dear Mrs. Dyck

When I answer these questions it always seems like I'm famous and I'm writing to a special person. My feelings have changed. By answering these questions people always say oh you act so big and other kind of things. I think by journal writing I'v become a way better writer.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

My mark had changed from January to April. I think this happened by journal writing.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

I don't think it made any difference. I guess I feel this this way because I'm doing journal writing.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

I think my long questions did change from the one in January. I think this happened because journal writing. I can learn more in journal writing than in just plain science.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

It sort of did. I feel this way because one time I have to do this. The next thing I know I'm doing something else.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

I felt a change in my body when I was answering these thinking questions. You have a totally different feeling in yourself that helps you answer these questions.

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

I think it would be useful in a school setting. I think that it could also be useful outside the school.

8. What suggestions would you make for another student or teacher interested in using this strategy?

Instead of using these kind of questions, You could also ask math questions and other kinds.

9. Would you recommend dialogue journal writing to others? Why?

Yes I do think that it would be useful for other people. It could help them answer longer questions.

#### Student Survey - Grade 4 - Student #2:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

I feel good and much better at it. I feel that yes, I have improved. My feelings to a writer have changed, I now feel like a more interesting writer and I feel that with all this

writing I have been becoming much neater in my note books. I think it has helped by making me think about what I write and if it makes sense. I also think I am more into writing now.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

Yes it did. I had a much better mark on the test in April than I did in January. I think it happened because I started thinking more about the subject in April a lot more than the one in January.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

No, I didn't like long answer questions in January and don't now because I always feel something's wrong with it and I hate it when I can't think of enough to say.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

Yes it did. I think it happened because I have learned to think more about it before I go and write it on the paper.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

Yes actually I think it did, but in a good way! It helped me understand what I was working on. I feel this because I realized it during this unit and have prof in my brain that it helped.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

I feel better as a thinker but not a questioner. For, this Journal writing has got me thinking a lot more. I'm still not as good a questioner because I haven't been asking questions, you have!

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

Yes I do think it could help. For example, outside of school with dialogue Journal writing you can keep in touch with family + friends that you don't see very often. Or in school it would help by getting people interested in others, and by getting the writers to actually write and mean it.

8. What suggestions would you make for another student or teacher interested in using this strategy?

No, not really. Except that they might want to use eseyer questions than you do.

9. Would you recommend dialogue journal writing to others? Why?

Yes I woud mention it to others. I would because it has helped me alot so it would probably help others too. I would also recommend it because they might like it.

Student Survey - Grade 5 - Student #1:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

I feel that sometimes I can write pretty good. Well when you write in your dialogue journal it wasn't that hard. Well it helped me because I could talk through writing and you can learn that way.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

Yes it did change the short answer part I did better in January then in April because I didn't have as many notes in April.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

Well I probably felt better answer the long answer qestion in the April test because we did one in January.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

Well the mark did get better in April because maybe the question was easyier in April then in January.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?



Well I think dialogue journal writing effeces the way you learn because it's a good way to learn and a fun way to learn.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

Not really, but it might of made me think when I was writing in my dialogue journal.

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

In gym it might be nice maybe then you could learn more about the sport that you want to know about.

8. What suggestions would you make for another student or teacher interested in using this strategy?

I think other teachers and students should do it and I would tell them that they could be suprised at how it works.

9. Would you recommend dialogue journal writing to others? Why?

Yes, because it's a good way of learning.

#### Student Survey - Grade 5 - Student #2:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

Not the greatist. Because of putting it all together so it will make sence. Also I run out of ideas. When we were doing this project, when every time it was social studies period I was so glad because I liked reading about something and writing about it, but not like book reports more like textbooks. I only like reading about social studies like vacation places. It sort of helped me because I could never expsress my words in writing before.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

No. I find that short answer questions go faster because sometimes they are really easy.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

Yes, as soon as he handed me the test and I read the question, I knew I was going to get a bad mark because of the way we had to take a side it was sort of scary. The first tests long-answer questions I knew they were going to be easy because it was written more detailed then in journal writing.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

Yes, and NO. The first long-answer question in April I got a middle mark. I guess I got it because I couldn't make or take a side.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

Yes. I feel more positive if my notebook has a little more detail in stead of not finishing a subject, and jumping to a new one. But I like the idea of doing your own research by yourself.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

I felt more like a "questioner" more than a "thinker", because I had alot of questions that weren't answered.

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

No. I can't think of any other place, in school. At home. Instead of talking to your parents you could use a journal to exspress more than talking.

8. What suggestions would you make for another student or teacher interested in using this strategy?

Well maybe I would say that it helps the teacher know what the student thinks about it, and also gives them there point of view.

9. Would you recommend dialogue journal writing to others? Why?

Maybe, it helps you to become a better writer than you maybe are and it also makes you think alot more.

Student Survey - Grade 7 - Student #1:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

I feel that my writing is a little over average. This project has not made any effect on my writing. To me journal writing is not much different than any other writing, I also keep my own Journal at home.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

There was not much of a change between both results as it was only a 1% difference. Studying the journal entrys compared to notes, there is not too much of a difference between them.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

I didn't feel any difference answering the long answer questions. It did not make a difference to me, I still find long answer questions a little more diffecult.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

There wasn't much of a difference. I found both of the long answer questions had the same amount of difficulty.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

I don't think it effected anything. As I said before there wasn't that much of a difference between them.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

I think that I think a little more before writing a question down than I did before. Because journal writing takes a little more thinking

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

It might be helpful with some other subjects. As of outside of school I don't know.

8. What suggestions would you make for another student or teacher interested in using this strategy?

If you use this program I suggest you write carefully because you might miss something that might be on the test.

9. Would you recommend dialogue journal writing to others? Why?

Yes, because it is a good thing to try and it could improve your mark.

Student Survey - Grade 7 - Student #2:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

I don't think I'm a good writer. No, they have'nt. I don't think it helped me because I did not understand most of it

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

Yes it did. Because I do not understand all of the long answers that we have to write, and I'm not a creative writer. I also didn't have facts to look at, just my questions and answers

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

Yes. Because it was on a different chapter, which was harder.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

Yes. Because the questions were harder on the second test (April) and that I was worried more.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

Yes. Because I did not learn nearly as much. I like definitions better.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

No, Because I forgot it alot more than I did on the other units. I like defenitions better.

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

No, No. but maybe for band.

8. What suggestions would you make for another student or teacher interested in using this strategy?

Read threw the unit with the students and explain everything the students do not understand.

9. Would you recommend dialogue journal writing to others? Why?

No, Because you don't learn nearly as much.

#### Student Survey - Grade 8 - Student # 1:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

My feelings about myself as a writer hasn't changed. I still can't put the right words on paper without messing up the whole piece of writing. But this writing did help me be a little neater. I guess we didn't write as much as we should have. So, my feelings about myself as a writer hasn't changed.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

My mark on the short-answer questions did go up. Probuly I knew it from studing. We did focus on those things in the journal.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

Yes, I did feel differently toward the long-answer questions. I felt like I knew the answers almost right away. All the questions were answered in my journal.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

Yes, the mark on the long-answer questions did change quite a bit. Like I said all of the questions were answered in my journal, so I knew the answer.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

Well, ya, I think so. I sort-of understood more stuff than the others in my class. Well I asked questions in my journal and they were questions that weren't studied in class.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

Well, I guess I could think a little better and was able to ask more questions than I could before. I have no clue why this happened, maybe because I wanted to know more and this was my chance.

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

No, I don't think there are any places where you can dialogue journal writing except in science and social studies. I don't where you can use this writing out of school.

8. What suggestions would you make for another student or teacher interested in using this strategy?

I'd suggest for them to use it more than once a month. That way they can learn more in that subject and will improve in their writing skills.

9. Would you recommend dialogue journal writing to others? Why?

Yes, I would recommend this dialogue journal writing because it does help you with your subject and all your questions are answered.

Student Survey - Grade 8 - Student # 2:

Please answer the following questions regarding the project you have just completed. You may either respond in writing or orally, onto a tape recorder.

1. How do you feel about yourself as a writer? Have your feelings changed at all as a result of this project? Please explain why you think dialogue journal writing did or did not help you become a better writer.

I feel that me, as a writer, I have improved with the neatness of writing. This journal dialogue has helped me because of the neatness that my writing has improved to, and my feelings have changed. I think I will start writing a little more.

2. Did your mark on the short-answer questions on your Unit Test change very much on the test in April from the one in January? Why do you think this happened?

No it didn't but that was because there were more questions on the more recent test. It didn't go down much. Only about 7%.

3. Did you feel any differently towards answering the long-answer questions on the test in April than you did towards answering them in January? Why did you feel this way?

Yes, I found them easier to do because I had that dialogue writing. I knew the material because of the journal also.

4. Did your mark on the long-answer questions on the Unit Test change very much on the test in April from the one in January. Why do you think this happened?

Yes, the more recent test mark went up a lot from the other test. This happened, again, because the dialogue journal writing because it helped me to study.

5. Do you think dialogue journal writing effected the way you learned Science or Social Studies material? Why do you feel this way?

Yes, very much so because whenever I wrote something it stayed in my head because I had to think to get my answer to write in the journal, but when I study for a test the things I study go right through my head.

6. Did you notice any change in yourself as a 'thinker' or as a 'questioner' as this project progressed? Why do you think this happened?

Yes, I could come up with answers easier because whenever I wrote something down in the journal it was easier to remember because I had to come up with what I had wrote down

7. Are there other times when you think dialogue journal writing might be useful in a school setting? What about outside of school?

Yes, it could be very useful for kids who are having trouble with studying for tests. The only other place this would probably be useful is in a home schooling plan.

8. What suggestions would you make for another student or teacher interested in using this strategy?

For the student, this is not as easy as it sounds. For the teacher, use questions that would be on the test for that unit.

9. Would you recommend dialogue journal writing to others? Why?

Yes. It helped me in two out of three areas in school and so I think that students who are having trouble studying for tests should use this method.

## APPENDIX I - TEACHER SURVEY RESPONSES:

### Teacher Survey - Grade 4

Please respond to the following questions regarding the study we have just completed. You may either respond in writing, or orally onto a tape recorder.

1. Have you seen any change in students' attitudes to writing in the content areas, as a result of this project?

As the project progressed, the students seemed to grow in comfort and confidence in responding in written form.

2. Did you notice any change in students' 'comfort level' when responding to higher-level questions after the dialogue journal experience compared to before it?

Yes, at first there was a sense of, what do we do, but after a while they welcomed the challenge and their responses changed accordingly.

3. Did you notice any change in the quality of written responses at a higher-level without direction or prompts from you as the project progressed, or did self-directed responses remain at the same level both on tests and in journals? What would you suggest as a possible reason for this?



It seemed that the quality of responses improved as the students became more comfortable delving into areas where they had not been before.

4. Did you notice any change in the quality of written responses at a higher-level as a result of direction or prompts from you in the journals as the project progressed? What would you suggest as a possible reason for this?

Yes, there seemed to be a higher quality of response when prompted. The reasons may lie in pointing students in new directions, challenging them in areas not tread before.

5. How did the test marks of the 'treatment group' compare to those of the rest of the students in the class both before and after the project? If there was a significant difference in short-answer questions or long-answer questions, to what do you attribute this difference?

Before the project, the test scores of the treatment group were in the upper part of the class. This was continued after the project. Basically, the "treatment group" had the top marks in the class.

6. Did you see any significant change in either the students or yourself as 'questioners'? What might be the reason for this?

I found that as a questioner, dialogue writing offered an opportunity for expanding into different areas from the responses to the initial question. The students, too, were starting to pick up on this. I found that the students were bringing more and more of the personalities and personal histories to the question.

7. How do you feel about this strategy as a means of improving writing, learning, and/or thinking for students at your grade level? Have these feelings changed any throughout the project?

I believe that dialogue journal writing is an effective strategy for writing, thinking, responding. The only problem is that it can be cumbersome when the group is too large.

8. How did the time spent responding to journals compare to the time spent planning and marking other writing activities for the rest of the class? In your opinion, was it worth the time?

Responding to journals is more time consuming but it is worth it, given the possibilities that are opened up.

9. Could you see yourself ever using dialogue journals in your classroom again? If so, could you see them as being useful to students in any other subjects or circumstances?

Yes, I could see myself using dialogue journals again. Dialogue journals could be useful across the curriculum.

10. What recommendations would you have for others who might be considering the use of dialogue journals (type of student; whole class vs small group; applicability to other grade levels and subject areas, etc.)?

I'd recommend dialogue journal writing for small groups. They could be effective in virtually all content areas.

11. Would you see this strategy being useful in a multi-grade situation? Why do you feel that way?

They could be very useful in multigrade situations, especially if the grades constitute a relatively small number of students. Dialogue writing is instructional but also promotes independent thought and work. It also incorporates many skill areas in L.A.

12. Would you consider the results to be valid from all of the students in your class who took part in this study, or would there be a student whose results you would not recommend as being valid? Why might they be invalid?

I would consider the results valid, especially in light of conversations I've had with these students and their perceptions of the project.

13. Are there any major statements, generalizations, or observations that you would like to see included in the written portion of this study to make it reliable and useful to others?

Dialogue journal writing not only improves and develops writing skills, but it can also enhance thinking skills and foster an atmosphere of exploration, risk taking, observation, and justification.

#### Teacher Survey - Grade 5

Please respond to the following questions regarding the study we have just completed. You may either respond in writing, or orally onto a tape recorder. [Note: These responses have been transposed from a tape.]

1. Have you seen any change in students' attitudes to writing in the content areas, as a result of this project?

I believe that the attitudes of the 4 students that I used stayed quite consistent. The 4 students represented a variety of writing attitudes and abilities, and I did not see any significant change in attitudes as the project went on.

2. Did you notice any change in students' 'comfort level' when responding to higher-level questions after the dialogue journal experience compared to before it?

I believe the 'comfort level' is something that is difficult to compare and to realize but I would definitely suggest that after looking at the tests and just observing students that the 4 students that did the dialogue journal feel less apprehensive when confronted with a long-answer type of question. They felt a little more comfortable handling it and expressing their ideas in writing.

3. Did you notice any change in the quality of written responses at a higher-level without direction or prompts from you as the project progressed, or did self-directed responses remain at the same level both on tests and in journals? What would you suggest as a possible reason for this?

Looking at the journals and the tests, I really didn't see a lot of change in the quality of written responses at a higher level. The students that were better at doing that sort of thing sort of stayed at that level, and the poorer students made some progress, especially one of the students, you could definitely tell improved but, as a whole, I would say that the responses did not change a lot in quality.

4. Did you notice any change in the quality of written responses at a higher-level as a result of direction or prompts from you in the journals as the project progressed? What would you suggest as a possible reason for this?

Again, I didn't see a lot of difference even if I did prompt them and guide them. It stayed at about the same level it seemed. The students that were taking off on ideas given to them and prompts did so, and continued to do well throughout the project, and the students who didn't do well sort of stayed at the same level. I did not see a whole lot of quality change.

5. How did the test marks of the 'treatment group' compare to those of the rest of the students in the class both before and after the project? If there was a significant difference in short-answer questions or long-answer questions, to what do you attribute this difference?

After comparing test marks between the treatment group and the rest, both before and after the project, I did not see a significant change in either the short answer questions or long answer questions. The marks stayed fairly consistent for the treatment group as compared to the rest of the class.

6. Did you see any significant change in either the students or yourself as 'questioners'? What might be the reason for this?

Speaking for myself first, I definitely felt that I became a better questioner as the project progressed. Reading and responding to the journal entries made me think about the content area more deeply and, looking for good questions in order to prompt the students in the direction I wanted them to go really helped me to search out proper questioning techniques, and I believe I became a better questioner during this project. As far as the students are concerned, some of the students definitely improved as far as their questions went during the project, others did not. So it seemed to depend on the type of student. Attitudes were good. All 4 students had a good attitude towards the project, but some of them just did not seem to be able to improve their questioning, they just never were quite sure how to go about asking questions, while others really learned how to do that very well, and learned a lot by doing so.

7. How do you feel about this strategy as a means of improving writing, learning, and/or thinking for students at your grade level? Have these feelings changed any throughout the project?

I believe that for some students it is a very good method of improving writing, learning, and thinking but it really seems to depend on the type of student. It's hard to judge that with using only 4 students in my group, but it seemed that some really took off on it, while others did not. For some of the students it was not structured enough; they seemed not to be able to handle the self-direction, and so it really seemed to depend on the students. Some did well, while others did not. So I believe it would be a good part to use in your strategies in your classroom, but you may not want to use it exclusively, because some students really need a little more direction.

8. How did the time spent responding to journals compare to the time spent planning and marking other writing activities for the rest of the class? In your opinion, was it worth the time?

I found that quite a bit more time was spent responding to the journals. That's because possibly it was something I did on top of the rest of the class. I still had to plan for the rest of the class including responding to these journals. It definitely took some time. It was worth the experience. I learned a lot about how the kids thought. It was nice to get a personal dialogue going with these students, but it was time consuming even with only 4 students. Because of that, I'm not sure how feasible it would be using the strategy for an entire class. If you would have a whole class of kids doing dialogue journals and you would have to respond, it would become quite cumbersome.

9. Could you see yourself ever using dialogue journals in your classroom again? If so, could you see them as being useful to students in any other subjects or circumstances?

Yes, I could see myself using dialogue journals again as a part of my teaching strategy. It could be a very useful piece of the puzzle in overall teaching strategy, and I believe Science, Social Studies and Language Arts are the 3 subjects that I could really see it being very useful. In Language Arts - novel studies or short story studies, it could really be good to find the personal responses of the students and they would really feel comfortable I think asking questions and responding personally, perhaps more so than in a classroom setting where some students are reluctant to express their opinions, and in a dialogue they may be more willing to open up, and it would also be very good practice for them to put their thoughts into writing, so I really feel that dialogue journals do have a good place in the classroom.

10. What recommendations would you have for others who might be considering the use of dialogue journals (type of student; whole class vs small group; applicability to other grade levels and subject areas, etc.)?

As I already mentioned I believe, as far as subject area goes, Language Arts, Social Studies and Science are definitely a few that I can see dialogue journals being very useful. As far as grade levels is concerned, I'm not sure whether it would work well before grade 4; maybe to a lesser degree in the younger grades. It would be good practice for them to get their ideas onto paper, but students have a lot of difficulty doing that. Maybe it's because they don't do enough of it, but I can see some of the problems being worse at a lower grade level. I'm not sure I can see this being useful before grade 4; I may be very wrong here. As far as small group goes, I really believe that would be the only way to go. Even if you had your whole class doing it, you would want to only take in some of the notebooks on a daily basis, perhaps responding to each student every 2 or 3 or even 4 days and just taking in a few books so you wouldn't have a whole class of notebooks to look at every night. It would be just too cumbersome that way, and I really believe that the quality of response would tend to diminish if you were doing 25 - 30 every night so you'd have to be careful about that.

11. Would you see this strategy being useful in a multi-grade situation? Why do you feel that way?

Yes, I really think it would be a great strategy to use in multi-grade. Having been in a multi-grade situation myself, you're always looking for some type of self-directed type of teaching that is both useful and valid for the students, and this would be something that would work very well. You could

give assignments and prompt students at the beginning of the class and they could work on their own, and you could respond to them after class or some other time and it would give you time to work with other grades, so I believe that would be very useful in a multi-grade situation.

12. Would you consider the results to be valid from all of the students in your class who took part in this study, or would there be a student whose results you would not recommend as being valid? Why might they be invalid?

The 4 students I used in my classroom have quite a range of abilities and attitudes, etc. I don't think that any of them should be considered invalid. There's no one in the group that you probably wouldn't find in any classroom, so I believe it is valid although I really tried to pick 4 students that represented a wide range of abilities and attitudes and as a result some took off a lot better than others, so you'd really have to be prepared for some students not doing well with this strategy, but to answer the question, I do believe it was valid.

13. Are there any major statements, generalizations, or observations that you would like to see included in the written portion of this study to make it reliable and useful to others?

I believe I have vented all my comments, so I do not have any major statement or generalization to make at this time.

#### Teacher Survey - Grade 7

Please respond to the following questions regarding the study we have just completed. You may either respond in writing, or orally onto a tape recorder.

1. Have you seen any change in students' attitudes to writing in the content areas, as a result of this project?

In the beginning, the students' attitude to writing in the content areas was a bit apprehensive in terms of expectation, along with some positive anticipation for studying content in a different manner. These feelings seem to "level off" as the study progressed.

2. Did you notice any change in students' 'comfort level' when responding to higher-level questions after the dialogue journal experience compared to before it?

I noticed a definite increase in 'comfort level' after writing in the dialogue journals. Students approached the questions with more confidence than before.

3. Did you notice any change in the quality of written responses at a higher-level without direction or prompts from you as the project progressed, or did self-directed responses remain at the same level both on tests and in journals? What would you suggest as a possible reason for this?

I think the quality of the written responses did improve somewhat without my prompting. Students may have felt less fear of doing the writing incorrectly and could then write more freely and without inhibitions.

4. Did you notice any change in the quality of written responses at a higher-level as a result of direction or prompts from you in the journals as the project progressed? What would you suggest as a possible reason for this?

There was also some change in responses where prompting was given. Some students tended to write more and ask better questions. Others began to try and solve some of their questions on their own. Prompting may have put more of the responsibility of questioning and discovery on the students.

5. How did the test marks of the 'treatment group' compare to those of the rest of the students in the class both before and after the project? If there was a significant difference in short-answer questions or long-answer questions, to what do you attribute this difference?

Does not apply to this group. Only a small treatment group was used, but they were all the students in that grade.

6. Did you see any significant change in either the students or yourself as 'questioners'? What might be the reason for this?

I think the quality of questions improved on the part of myself and the students. This might be due to becoming more comfortable and familiar with the assignment.

7. How do you feel about this strategy as a means of improving writing, learning, and/or thinking for students at your grade level? Have these feelings changed any throughout the project?

I feel that writing, learning and thinking can benefit from this type of strategy. My feelings at the beginning of the project were that it would be useful to experience first hand what the students are feeling about the unit of study and their personal areas of interest. I later noticed that the students learnt alot about the content just by thinking about it and trying to come up with questions and ideas.

8. How did the time spent responding to journals compare to the time spent planning and marking other writing activities for the rest of the

class? In your opinion, was it worth the time?

The time spent responding to journals is somewhat more time-consuming than planning and marking other writing activities. I would say the time spent would be worth it, if it was done as a smaller portion of the unit work.

9. Could you see yourself ever using dialogue journals in your classroom again? If so, could you see them as being useful to students in any other subjects or circumstances?

I think I might implement dialogue journals some time in the future, but in combination with other teaching strategies for the unit being studied. I think they could be used in any subject area where the teacher needs a more personal view from each student, and to promote critical thinking in a different way.

10. What recommendations would you have for others who might be considering the use of dialogue journals (type of student; whole class vs small group; applicability to other grade levels and subject areas, etc.)?

For others who are considering the use of dialogue journals I would recommend using a smaller group as opposed to a large class, mainly because of the time needed to respond properly to each student. I think it could be used in a variety of subject areas and grade levels as well.

11. Would you see this strategy being useful in a multi-grade situation? Why do you feel that way?

When teaching a multi-grade class, two or more lessons are taught during the same class period. A dialogue journal might be useful in this situation because it can help you deal with each student and their understanding of the course content, thereby enabling you to see whether you are teaching the students effectively or if you are "spreading yourself too thin" teaching multi-lessons.

12. Would you consider the results to be valid from all of the students in your class who took part in this study, or would there be a student whose results you would not recommend as being valid? Why might they be invalid?

Out of the 5 students that I tested, I would consider only one as invalid. She was absent for about three weeks during the second part of the study. Although she did write in her journal during her absence, there was nobody available to respond to each entry in her journal. [One of the girls in this group "lost" half of her journal, so her results were not useable, since a valuable part of the data was missing].



13. Are there any major statements, generalizations, or observations that you would like to see included in the written portion of this study to make it reliable and useful to others?

I think dialogue journals are an effective way to communicate with most students in a particular subject area. Not only are they a good indicator of students' comprehension of a subject, they are also a good tool for learning, thinking and writing.

Teacher Survey - Grade 8:

Please respond to the following questions regarding the study we have just completed. You may either respond in writing, or orally onto a tape recorder. [Note: These responses have been transposed from a tape.]

1. Have you seen any change in students' attitudes to writing in the content areas, as a result of this project?

Yes, I think I have seen a change in some students' attitudes. These 4 students were always willing to write, and it was not a problem motivating them, but I would say that in the time that this writing project took place, they became more confident writers and did not ask as many questions before they began writing, as when the project started.

2. Did you notice any change in students' 'comfort level' when responding to higher-level questions after the dialogue journal experience compared to before it?

Yes. Again, this varied with the students, but especially with one or two of the students the comfort level was, uh, they had a greater comfort level after having gone through the dialogue journal experience.

3. Did you notice any change in the quality of written responses at a higher-level without direction or prompts from you as the project progressed, or did self-directed responses remain at the same level both on tests and in journals? What would you suggest as a possible reason for this?

I would say that, it seems to me that the quality of their written responses stayed very much the same. There may have been a small improvement. I'm not sure about reasons for this. I think part of the difficulty or part of the lack of change was the amount of time that was spent on this in the grade 8 classroom. The amount of time was limited, and it was extremely spread out because of other various activities like a class drama that interrupted it. So some continuity was missing in my class experiment, and I think that effected the results.

4. Did you notice any change in the quality of written responses at a higher-level as a result of direction or prompts from you in the journals as the project progressed? What would you suggest as a possible reason for this?

I think my response to this question would be very much similar to my response to question 3. I did not notice a marked change during the whole project, and again I think it was a problem of interruptions, and the length of time that this project went - it wasn't a concentrated time like I wish it could have been.

5. How did the test marks of the 'treatment group' compare to those of the rest of the students in the class both before and after the project? If there was a significant difference in short-answer questions or long-answer questions, to what do you attribute this difference?

The treatment group did very well on the first set of test marks, before the project. All of them finished within the top quarter of the class and 1 of the treatment group actually scored the highest mark in class. In the second set of tests, after the project, the students also did very well, again in the top quarter of the class and again one of the treatment group scored the highest mark in the class. There was not a significant difference in either the short-answer questions or the long-answer questions from first to second test. The treatment group did improve on the whole from first to second test by at least an average of about 10 percentage points, between the two tests, on the other hand, so did the rest of the class, so their improvement was not significantly greater than other members of the class, from test one to test two.

6. Did you see any significant change in either the students or yourself as 'questioners'? What might be the reason for this?

I wouldn't say that I saw a significant change in the students as questioners, for whatever reason, possibly because of the length of time, or the intensity with which we did this project, but I saw myself change as questioner. It was an activity that helped me focus in on the kinds of questions I was asking and also to focus in on how those questions were worded, to see that I was getting a response that I really wanted, or whether my questions were misleading to the students, so it was an exercise that improved my questioning skills.

7. How do you feel about this strategy as a means of improving writing, learning, and/or thinking for students at your grade level? Have these feelings changed any throughout the project?

I like the strategy, and I will use it again on my own, next year. Have these feelings changed any throughout the project?

No, I still like the strategy.

8. How did the time spent responding to journals compare to the time spent planning and marking other writing activities for the rest of the class? In your opinion, was it worth the time?

The time spent responding to journals was very similar than the time spent planning and/or marking. If I did this with the whole class, for that particular unit, let's say in science, the overall time spent for that unit would likely be greater, because I have taught the units for several years, and so planning is not a great time consumer. Marking would also not be a great time consumer, because a lot of the activities are done in class, and with hands-on kinds of activities that can be evaluated in class. Was it worth the time? Yes, I believe it's worth the time. Even if a person did it with the whole class, I think there are enough benefits to, for at least one unit, spend that time marking the uh, or responding to the journal entries.

9. Could you see yourself ever using dialogue journals in your classroom again? If so, could you see them as being useful to students in any other subjects or circumstances?

Yes, I could also see them being useful in language arts and social studies. I think, with the right unit, it would be interesting even to try response journals in Mathematics for a unit. I could see some value in discussing Math verbally with the students, and focussing their thoughts in a certain direction, or directing their thoughts, if for no other reason than to speak about what you are thinking about when you are doing a specific problem.

10. What recommendations would you have for others who might be considering the use of dialogue journals (type of student; whole class vs small group; applicability to other grade levels and subject areas, etc.)?

I'm not sure about type of student. I think... I'm just trying to project this ... I would be willing to try it with all types of students. And I think it would lend itself well to both the academically gifted and those students who are on a modified program. Their responses would just be at a different level. Whole class vs small group - I think there would be value in both. Like I said earlier, I would like to try it next year with the whole class. I think it is applicable to other grade levels and subject areas.

11. Would you see this strategy being useful in a multi-grade situation? Why do you feel that way?

Absolutely, because it does allow the students some independent and less-directed time that they could make use

of. I think probably if this experiment or this test was carried out on students who had grown up in a multi-grade school, in multi-grade situation, I would suggest that those students would likely respond at greater length and have answers that were more developed than what was found in students that went through a single grade system, simply because they have developed that independent study and independent thinking aspect to a greater extent.

12. Would you consider the results to be valid from all of the students in your class who took part in this study, or would there be a student whose results you would not recommend as being valid? Why might they be invalid?

I think all the students' results - uh, any one of them is just as valid as another student's results. In terms of the results, in the overall picture, or in the overall research of the dialogue journals, I'm not sure that our situation was the best case scenario, again because of the interruption of drama and spring break, and the fact that this unit was long and dragged out because of these other things.

13. Are there any major statements, generalizations, or observations that you would like to see included in the written portion of this study to make it reliable and useful to others?

None other than that I would recommend it as another learning tool. I think there are some valuable things that students and the instructor learn through dialogue journals. Some real communication happens between student and teacher. It is excellent practice in writing; thinking skills are stimulated. Dialogue journals as one tool of instruction is a good teaching tool and I would like to try it in the future. I don't think necessarily that it's the answer for every situation and every subject area, but as one teaching tool set out to improve writing in the subjects, and to improve thinking, I think it would, over a longer period of time, and a more concentrated period of time than I did with my students.

## APPENDIX J - EVALUATION FORM

### Evaluation Form Used by Independent Markers to Assess Writing/Thinking:

This is a sample form on which independent markers recorded scores of 1 - 6 when they applied both the GIM and the Analytic Marking Scales to Assess Writing and Thinking to writing samples.

### Evaluation of Samples:

TYPE OF SITUATION - (Circle) - Journal / Test

GRADE LEVEL - (Circle) - 4 / 5 / 7 / 8

ASSESSMENT / SCALE	#1	#2	#3	#4
General Impression Mark				
Organization and Sequence				
Wording and Style				
Focus or Theme				
Ideas				
Choice of Details and Elaboration of Ideas				
Sentence Structure				
THINKING / Organization of Ideas				
THINKING / Logical Reasoning				
THINKING / Style				
THINKING / Quality of Response				