

An Investigation into the Efficacy of Using Direct Explicit Instruction
of Single-Cue Writing Strategies

by

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Abstract

The purpose of this dissertation was to investigate the effectiveness of teaching students to write essays using a multi-cue decision-making strategy that asked students to **I**nscribe the writing space, **D**efine the rhetorical problems locally, **D**iscover the information necessary to solve the local rhetorical problems, and **L**ink the individual units of the essay logically (IDDL). An explanatory mixed methods research design was employed to investigate the importance of using direct explicit instruction of single-cue writing strategies. The research questions were: what is the effect of teaching first-year university students single-cue heuristics as measured by their growth in essay writing between a pretest and posttest measure? and, what is the effect of teaching first-year university students single-cue heuristics as measured by their final essay grades at the end of term? A total of 99 students, divided into control (22 students) and experimental (77 students) groups, participated in the quantitative data collection by providing pretest and posttest writing samples. In the qualitative data collection phase, twenty students (ten from each group) were individually interviewed. While the results indicated that the control group outperformed the experimental group on all measures, except content, there were a number of confounding variables that require further investigation.

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Chapter 1

Introduction

Differences between the Writing Processes of Novice and Experienced Writers

The talk-aloud research protocol that Flower and Hayes (1981) used to develop their cognitive process model of writing provided insight into the differences between the way in which novice and experienced writers compose text. The cognitive process model, which emerged from an investigation into the writing process followed by experienced writers, identified the process of writing as a hierarchical series of embedded decisions which the writer orchestrates to produce text. Though the research of Flower and Hayes was instrumental in delineating the cognitive process followed by novice writers from that of more experienced writers, it did not, to any significant extent, explain the differences nor did it identify strategies for teaching novice writers to think the way that experienced writers think.

There are a number of challenges in teaching novice writers to manage the decisions that essay-writing requires. Novice writers have not yet internalized knowledge about writing mechanics and writing strategies to the extent that experienced writers have done and so must use the limited resources of working memory to simultaneously attend to basic writing mechanics, essay content and development of ideas, and organizational strategies (McCutcheon, 1996). The sheer volume of information necessary for students to make decisions can be overwhelming particularly when they are operating in an unfamiliar writing environment. One of the ways to manage memory load is by using heuristics to facilitate decision-making. The findings of the research into the effectiveness of older heuristic writing strategies have been mixed. However, there is some evidence that heuristic writing strategies can be taught successfully (Lauer, 1970; Palinscar & Brown, 1984). In addition, beyond the specific domain

of the pedagogy of composition and rhetoric, recent research has suggested that the use of single-cue decision-making heuristics is more effective than had previously been thought (Todd & Gigerenzer, 2007). This dissertation was meant to investigate whether the teaching of a multi-stage writing model, which is structured on a small number of single-cue decision-making heuristics, will allow students to perform better in academic writing assignments.

Purpose of the Study

The purpose of this study was to investigate the effectiveness of teaching students to write essays using a multi-cue decision-making strategy that asks students to **I**nscribe the writing space, **D**efine the rhetorical problems locally, **D**iscover the information necessary to solve the local rhetorical problems, and **L**ink the individual units of the essay logically (IDDL). This research was designed to lead to a greater understanding of the importance of using direct explicit instruction of single-cue writing strategies to make the writing process more efficient. In addition, the study sought to determine if there were any strategies that were not specific to any particular genre, discipline, or academic discourse that writers could use to construct text. It has been argued that writing across the curriculum programs do not address the domain specific protocols of academic writing situations and may not provide students with adequate preparation for the writing requirements of college and university. Some research into the effectiveness of non-specific training in writing suggests that transferability of writing skills is limited (McCarthy, 1987; Wardle, 2007). However, it appears that students who achieve some degree of mastery of writing in one domain continue to perform better than peers who have not achieved such mastery when they are moved to a new writing situation in which neither of the two groups has received explicit instruction in writing protocols (McCarthy, 1987). In this research, I explored the notion that the unexpected proficiency of the successful group might be explained

by inferring the use of single-cue heuristics for decision-making in the new environment.

Personal Rationale

Over the past twenty years of teaching first-year students in a number of writing intensive courses, I have explored a number of strategies for assisting the students in developing their understanding of the writing process. In many cases, those strategies have resulted in improved performance with students demonstrating that they are able to execute strategies that have been identified for them. Unfortunately, the improvement often appears to be limited to the specific writing assignment on which the students are working. Students are not always able to transfer their knowledge to new writing assignments. In reflecting on Flower and Hayes' (1981) construction of the writing process as a hierarchical structure of embedded decisions, I have come to suspect that training students to address those specific decisions using a series of heuristics (i.e., economical decision-making strategies) may enable students to operate more independently in the text. The understanding of general heuristics for writing may also permit students to transfer their understanding of writing across disciplines.

The challenge of attempting to teach academic writing to first-year students has been both rewarding and frustrating. Though my teaching performance has been recognized with awards, I am not entirely convinced that my instruction has been as effective as I would like to imagine. There are times when I have had the satisfaction of noting exceptional improvement in the performance of some students. There are instances, however, when my instruction seems to have no effect at all. As much as I would like to attribute the improved performance to my teaching and the failure to improve to external factors, I also must acknowledge the very real possibility that I have succeeded in teaching students who would have learned without me but failed with those who had greater need of instruction.

When I began my PhD program in Education, I had intended to explore the variety of pedagogical approaches being used by the instructors of the so-called “W” courses at the University of Manitoba. “W” courses at the University of Manitoba are courses that have been vetted by the Department of English and determined to satisfy the Guidelines for writing courses. The criteria for “W” courses (i.e., in the minimum requirements to qualify for the written English requirement as approved by Senate) include:

- a minimum of three pieces of written work of 3-5 pages, or,
- a minimum of two pieces of written work of 6-8 pages, and,
- a minimum total word count of 3,000; and,
- instructor feedback on style as well as content, and,
- The written work must include a written description or argument that is clear, concise, and logically structured and that reflects an appropriate awareness of the audience or readership being addressed.

(<http://umanitoba.ca/faculties/arts/media/writtenglishrequirementinstructions.pdf>).

I was guided, at that time, by the suspicion that the University’s writing requirement was failing to effect a general improvement in students’ writing performance because, in part, instructors were failing to provide effective instruction. Preliminary reading of the literature, however, convinced me that I could not even begin to address that question until I had a clearer understanding of the ways in which students learn to write. In researching student learning over the course of the last three years, I have been humbled by the discovery of the depth of my ignorance. Like many writing instructors, I had been operating with the belief that modeling my own writing process would lead all students to adopt my strategies effectively. I was wrong. Instead, I discovered, instruction needs to speak to students at the students’ respective

developmental stages, accounting for the differences in experience, internalized procedural knowledge, working memory, and capacity for decision-making. My graduate course-work, which included studies in rhetoric, cognition, and first-year education, provided me with various insights into a possible solution to the difficulties first-year students encounter: a simple invention model for composition that facilitates decision-making by off-loading some information to the page. This insight led me to develop the IDDL writing model, which is designed to allow students to manage decision-making in discrete stages using the principle of ecological rationality to minimize the strain on working memory.

Theoretical Assumptions of the Study

The underlying theoretical assumptions (Flavell, 1976; Flower, 1981; Flower & Hayes, 1981; Flower & Hayes, 1986; Gigerenzer, 2004; Hashimoto, 1985; McCutchen, 1996; Polya, 1957; Raphael, Englert, Kirschner, 1989; Simon, 1955) of this study were as follows:

- Essay writing is a complex series of decisions that are hierarchically arranged.
- Students will learn to write more effectively if they learn to manage those decisions more effectively.
- Students have difficulty managing decision-making because of the difference between novice and experienced writers in the demands on working memory.
- Heuristics and other metacognitive techniques (e.g., visual models) permit students to manage decision-making more efficiently.

The writing process with its series of checks and counterchecks (Flavell, 1976) is a complex thinking activity. Flower and Hayes (1986) described the writing process as a series of embedded rhetorical problems, each of which requires a decision-making strategy. This is especially true for novice or inexperienced writers who often do not have the tools or strategies

necessary to be able to plan, translate, and review their writing (Flower & Hayes, 1981). The idea of writing as a problem-solving activity (Flower & Hayes) has its roots in the research of cognitive psychologists (Polya, 1957; Simon, 1955). Polya (1957) maintained that problem-solving skills could be taught in all disciplines by instructing students to follow four basic principles: (a) understand the problem; (b) devise a plan; (c) carry out the plan; and, (d) look back. Speaking more directly to the teaching of writing, Hashimoto (1985) stated that, in order to help students “invent, or pretest write, or limit a subject, many composition specialists advocate teaching students to use structured heuristic procedures” (p. 73). Hashimoto defined heuristics as “conscious deliberate search strategies” (p. 73). Flower (1981) suggested that, while heuristic procedures are only *high probability* ways to proceed for “complex problems like writing, heuristics are the most dependable and most creative way to go” (p. 45).

Training in metacognition allows novice writers to begin to understand the effects that thinking about writing has on the writing process. Metacognition is the ability to monitor the quality of one’s own thoughts and the products of one’s efforts; “it is the control processes which active learners engage in as they perform various cognitive activities” (Raphael et al., 1989, p. 346). In metacognition, all learning is deliberate, and learners are conscious of their own cognitive processes (Flavell, 1976). Flavell (1976) found that “metacognitive knowledge [which] consists primarily of knowledge or beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises,” allows students to focus on decisions intentionally by foregrounding the causal connection between decisions and consequences.

Writing instruction, however, must also account for the difference between novice writers and experienced writers in terms of memory requirements. In her research, McCutchen (1996)

identified the “capacity limitations which contribute to individual and particularly to developmental differences in writing” (p. 300). In particular, she was interested in the part that *working memory* plays in the writing process. McCutchen (1996) understood that it is:

within working memory that information (from the environment and from long-term memory) is stored during processing. Moreover, due to overall resource limitations within the system, trade-offs exist between working memory’s storage and processing functions. As more resources are devoted to processing functions, fewer resources are available for storage of information. (p. 300)

She further states that both comprehension of the text and composition of the text, make significant demands on the storage capability of the working memory. McCutchen alleged that keeping track of the three main processing demands of planning, translating, and reviewing (see Flower & Hayes, 1981) can overwhelm novice writers. McCutchen concluded that novice writers can become more adept at monitoring their thinking processes when provided with good instructional environments. With the help of instructors who provide the needed external support for the many writing processes, novice writers can learn and internalize the processes that are used by more experienced writers.

Gigerenzer (2004), who defines successful heuristics as those that are simple and specific to their context, argued that heuristics can be easily understood, easily taught to novices, and easily generalized to new situations. He further noted that, though heuristics exploit structures of environments and, thus, are specific to the environment in which they exist, they are nonetheless generalizable to new situations. This makes the heuristic a useful mechanism for addressing the individual decisions that Flower and Hayes (1981) identified as the dynamic that drives composition. Paradoxically, though Gigerenzer (2004) identifies heuristics as being specific to

their environment, the fact that they encourage writers to make their best guesses on the basis of environmental cues suggests that they may serve as a problem-solving strategy that is less likely to be domain-specific. One of the advantages of the cognitive process theory of writing is that it contextualizes composition as an interaction between the writer and the external environment. If a heuristic allows the thinker to reason analogously, using the information available in the environment to predict a similar pattern in a new situation for which the reasoner has incomplete information, the heuristic may be, in fact, a reasonable strategy.

While Gigerenzer (2004) does not speak specifically to the use of heuristics in composition, many of his observations could be extrapolated to the writing process. For example, Gigerenzer talks about the effectiveness of single-cue heuristics to aid in decision-making. Flower (1981) found that structured heuristic searches are “the most dependable” (p. 45). This process of reasoning by using “the single best available cue” (p. 169) may explain why effective writers, operating in the complex and ambiguous milieu of the writing environment, are able to make the kinds of decisions that are necessary to move the text forward. In many ways, the writing environment is one “with high variability, low predictability, and little opportunity for learning, [where] good decisions may none the less be made more often by simple mechanisms than complex ones” (p. 169). However, as Flower and Hayes (1981) reported, “sometimes a single cue in an assignment . . . can let a writer tap a stored representation of a problem and bring a whole raft of writing plans into play” (p. 365-366).

Research Questions

In order to collect data on this topic, a mixed method, explanatory design, approach (Creswell, 2008) was utilized. The quantitative approach was used to gather a large amount of data from all targeted students to form a baseline of students’ ability to write an essay. The

quantitative component, pretest and posttest writing samples, were used as a measure to determine if first-year students improved their writing skills following the explicit teaching of the IDDL writing model. Individual interviews were then conducted, using a qualitative approach, to investigate the respective student's individual understanding of the IDDL writing model.

The overall purpose of this design was to use qualitative data to explain or enrich initial quantitative results. The quantitative questions were:

1. What is the effect of teaching first-year university students single-cue heuristics as measured by their growth in essay writing between a pretest and posttest measure?
2. What is the effect of teaching first-year university students single-cue heuristics as measured by their final essay grades at the end of term?
3. What is the effect of gender on students' writing ability as measured by their growth in essay writing between a pretest and a posttest measure?

The qualitative questions were:

1. Tell me how you begin writing your essays in ARTS 1110?
2. Tell me how you make decisions about organizing your essay.
3. Tell me what strategies, if any, did you find to be helpful in completing your essay?
What strategies, if any, were not helpful?
4. Do you feel more confident writing essays now that you have taken ARTS 1110?
Why, or why not?

Significance of the Study

It has been argued by Russell (1995) that “there is no autonomous, generalizable skill or set of skills called ‘writing’ that can be learned and then applied to all genres or activities” (p. 57). Similarly, Wardle (2009) has reported that “because there are no general skills that students can learn and transfer to all writing situations, some suggest that students would benefit more from learning about the ways writing conventions vary across academic disciplines and discourse communities” (p. 784). Thonney (2011), however, hypothesized that “there are shared features that unite academic writing” (p. 347) and that “by teaching these features to first-year [college] students we provide them with a knowledge they can apply and refine in each new discipline they encounter” (p. 347). Swales (1990) and Williams and Colomb (1993) have written about the patterns and formulae that are prevalent in academic writing, and have made the case for teaching these writing strategies to students. They contend that direct, explicit instruction provides the guidance that students need if they are to learn to negotiate the different discourse communities successfully. Thonney (2011) found that first-year composition students who are introduced to the general characteristics of academic writing will, first, apply that knowledge in their composition courses and later adapt that knowledge to unfamiliar writing situations in other disciplines. She further concluded that instructors can provide first-year students with useful general knowledge about academic writing by providing practice in these areas. Thonney stressed the importance of looking at the similarities that exist in academic writing across the disciplines rather than focusing exclusively on the differences. She argued that “such studies can help us [instructors] provide first-year students with knowledge they can use now when writing in pretest disciplinary courses and build on later when writing the specialized discourse of their chosen field” (p. 359). The research on which this dissertation is

based investigated the efficacy of teaching students to use a general strategy for organizing academic essays and was meant to contribute to that larger body of literature on the effectiveness of disciplinary writing strategies. If the research reveals that there is a significant effect to the teaching of the IDDL writing model, that model could then be used to inform the pedagogy of first-year writing instruction. This might permit writing instructors to develop a pedagogical strategy that will equip first-year students to transfer writing skills to new writing environments.

Scope of the Study and Generalizability of the Results

Though the scope of the study was limited to two sections of Introduction to University at the University of Manitoba (Fall 2011), the findings are potentially generalizable to any WAC (i.e., Writing Across Curriculum) or WIC (i.e., Writing Intensive Curriculum) program in any college or university in Canada and the United States. David, Gordon, and Pollard (1995) found that WAC/WIC use writing as a way of consolidating content, often providing little instruction in composition itself. The WAC/WIC courses are constructed so that students master a body of knowledge and give students a chance to “tap writing’s heuristic power to make connections and achieve understandings that they may never have reached without writing” (p. 530). However, the authors point out that WAC/WIC courses are not writing courses, that is, courses in which the primary goal is learning how to write. Because WAC/WIC often embed writing within content courses and focus primarily on rhetorical structure and organizational strategies for essay writing, a heuristic model that permits students to develop decision-making strategies about the organization of their essays may prove useful.

Though the study focused on first-year writers in a university setting, the findings may be generalizable beyond the university setting. Because the study was meant to investigate the process of decision-making in writing, it may also apply to writing pedagogy in secondary

schools.

Definition of Terms

The following terms have been used throughout this study and are defined as:

Academic Discourse

The term *academic discourse* is used to refer to the shared assumptions, expectations, cues, and values that govern communication within a university community, in general, and within specific disciplines in particular. That is, within the university community in general, there is an overarching discourse that is characterized by broad, and sometimes ambiguous, assumptions (e.g., the value of rationalism, the importance of arguing from evidence, etc.). Within that discourse, there are also specific discourses in which the individual disciplines operate. Each of the disciplines has its own set of specific assumptions and conventions

Academic Essay

Academic essay is used in this dissertation to refer to an assignment that is written in response to a question or prompt and which conforms, in form, to an epistemological assumption, and mode of expression, appropriate to the conventions of a particular academic discipline. The wide range of distinct discourses that comprise a university community necessarily requires that the academic essay be flexible enough to accommodate different writing and formatting conventions and different assumptions about the nature of evidence. In general, however, the academic essay is one in which students articulate a particular thesis and organize supporting ideas around that thesis.

This definition is very similar to the definition of the research essay by McLeod Rogers and Taylor (2011) who stated that “the research essay can be defined as an evidence-based argument that a topic should be seen in a certain way, where evidence used is mainly

scholarly work published in journals and books (p. 110). They further state that “to think of “argument” in its most traditional scholarly sense is to recognize its specialized meaning: an argument is a *thesis* – a claim that is something is true – plus a series of *claims* designed to lead to the *conclusion* that the thesis is indeed true” (p. 111).

Academic Writing

Academic writing is defined as any written assignments at the university level that fulfill a purpose of education. Academic writing can take a number of different forms, including laboratory reports, literature reviews, discussion papers, business reports, and summaries.

Anchoring Heuristic

The term *anchoring heuristic* refers to the phenomena in which individuals use given benchmarks to guide their guesses in an unfamiliar environment (Kahneman & Tversky, 1973).

Cognitive process model of writing

For the purposes of this dissertation, the term *cognitive process model of writing* refers to the model developed by Flower and Hayes (1981). That model, which emerged from research that used think-aloud protocols to identify the cognitive processes that characterized experienced writers, represents essay-writing as a process through which the writer orchestrates a series of hierarchically arranged decisions. The decisions are not linear, instead are characterized by a complex recursive system where the writer returns to the previous steps as needed. It includes four phases: planning, generating, translating, and reviewing.

(a) Planning

In this dissertation, *planning* refers to the setting of goals, the generating of content, and the

organizing of that content. The function of the planning process is to take information from the task environment, external resources, and long-term memory, and to use that information to set writing goals.

(b) Generating

The term *generating* refers to the process of developing ideas using external resources and long-term memory. .

(c) Translating

The term *translating* refers to the process of transferring information from the writer's contemplation of an idea to the page.

(d) Reviewing

In this dissertation, the term *reviewing* refers to the process of monitoring the emerging text, and making adjustments to serve the essay's purpose. Reviewing also includes the process of correcting surface features of the text (i.e., punctuation, grammar, sentence construction).

Discipline

The term *discipline* refers to a particular field of study (e.g., English, philosophy, sociology).

Domain specific protocols

The phrase *domain specific protocols* refer to the customs and regulations that govern a particular area of study. While those protocols sometimes involve arbitrary decisions about page format and order of information, they also include fundamental assumptions about epistemology and the nature of evidence.

Ecological rationality

The term *ecological rationality* refers to the theory that human cognition occurs at the intersection between the individual and the environment in which that individual operates.

First-year composition

The term *first-year composition* refers to a general category of writing instruction courses, primarily in the United States, in which students receive dedicated writing instruction.

Whereas WAC/WIC courses use writing assignments to improve students' understanding of content, first-year composition classes devote classroom time specifically to instruction on the subject of writing. In Canada, there is no comparable tradition of first-year composition courses.

Foraging Heuristic

The term *foraging heuristic* refers to the strategy of limiting information searches by applying the principle of diminishing returns. As a search for information begins to yield fewer and fewer useful results, the foraging heuristic suggests that the individual move on to a new site or source (Payne, Duggan, & Neth, 2007).

Heuristics

In this dissertation, the term *heuristics* refers to problem-solving techniques that allow an individual to make decisions on the basis of available information.

IDDL

The term IDDL is an acronym for the writing model that was designed for this study. The model is intended to lead writers through the following steps: **I**nscribe the writing space; **D**efine the rhetorical problems locally; **D**iscover the information necessary to solve the local rhetorical problems; and, **L**ink the individual units of the essay logically. It is described in detail in chapter 2 and chapter 3.

(a) Inscribe the Writing Space

For the purpose of this dissertation, the word *inscribe* refers to the process of embedding

anchoring heuristics in an outline to guide the process of composition. By dividing the blank page into a series of logically linked steps, leading from the thesis statement, through the individual rhetorical problems suggested by the thesis, to the conclusion, students will be able to construct text in response to the anchoring heuristics.

(b) Define the Rhetorical Problems Locally

The term *define* refers to the second strategy of the IDDL model which asks students to use the arguable proposition to define the rhetorical problems locally. The arguable proposition, which includes both the claim that the writer is exploring and the reasons for that claim, provides direction to the writer by specifically identifying the sub-theses that need to be explored and/or substantiated.

(c) Discover the Information Necessary to Solve the Local Rhetorical Problems

The term *discover* refers to the third strategy which asks students to focus their research using the rhetorical problems that had been defined in the second strategy. The research then becomes more purposeful, guided by a specific and identifiable need. Research continues as long as it is fruitful (i.e., writers operate with a foraging heuristic). At the point at which the student's efforts result in no new information, either in support of or in opposition to the claim, the search can be concluded.

In the event that there is no supporting evidence, the student needs to consider the possibility that the claim cannot be defended on the basis of reason and the arguable proposition should be adjusted or replaced.

(d) Link the Individual Units of the Essay Logically

The term *link* refers to the operation of the fourth strategy which asks the student to think about the logical relationship between the individual units. Having written the individual

units, the student now links them to ensure that the reader is led from the thesis, through the evidence in support of the thesis, to the conclusion.

Multi-Cue Strategy

In this dissertation, the term multi-cue strategy refers to a method of problem-solving through the isolation of multiple discrete steps in the problem-solving process (Hillocks, 1986; Lauer, 1970; Young et al., 1970).

Revision

In this dissertation, the term *revision* will refer to the process of monitoring and adjusting the emerging text to ensure that the essay continues to reflect the writer's purpose and that the text remains coherent.

Single-Cue Heuristic

In this dissertation, the term single-cue heuristic will refer to the process of making decisions by relying on one single cue and ignoring other information (Hutchinson & Gigerenzer, 2005).

Writing across Curriculum

The term *writing across curriculum* (WAC) refers to a movement in colleges and universities that transferred some of the responsibility for writing development from first-year composition courses to content courses in which students were expected to acquire writing proficiency through instruction and practice in a variety of content courses and fields.

Writing Cues

In this dissertation, *writing cues* are defined as the explicit directions or implicit cues writers use to facilitate decision-making. Explicit directions may include the requirements for a

particular writing assignment or protocols for formal academic writing. Implicit cues may include the writer's understanding of audience or purpose, the influence of the guiding thesis, or challenges posed by the emerging text.

Writing Environment

The *writing environment* is one in which the writer, regardless of the degree of expertise, operates in an ambiguous environment and with incomplete information. The writing environment is one “with high variability, low predictability and little opportunity for learning, [where] good decisions may none the less be made more often by simple mechanisms than complex ones” (Todd & Gigerenzer, 2007, p. 169).

Writing Intensive Course

The term *writing intensive course* refers to a content course which includes frequent writing assignments, opportunities for rewriting, and consultations with the instructor. In contrast to writing across curriculum courses, writing intensive courses operate on the assumption that “primary responsibility for and ultimate authority over writing rests with individual faculty situated in particular fields” (Monroe, 2003, p. 4). In general, writing intensive courses do not provide writing instruction but instead use various kinds of writing assignments to get students to think about the course content.

Writing Process Instruction

For this dissertation, the term *writing process instruction* refers to how students learn to formulate an academic essay using a step-by-step instruction process that includes: (1) strategies for writing a thesis statement; (2) strategies for writing an outline; (3) strategies for writing an annotated bibliography; (4) strategies for writing a rough draft, and (5) strategies for preparing a final draft.

Writing Strategy Instruction

For the purposes of this dissertation, *writing strategy instruction* refers to the instructional method Graham and Perin (2007) identified as the process of providing explicit and systematic teaching of the steps necessary for planning, revising, and/or editing text.

Chapter Two

Review of Literature

Introduction

For the past two hundred years, writing instruction has occupied an important place in American universities. In fact, first-year composition is seen as a “universal requirement” (Fosen, 2006) for almost every first-year college and university student in the United States. Despite the wide variety of composition courses in the United States, there is a relatively “uniform approach to teaching writing” in most institutions (Graves & Graves, 2006, p. 9). Criticisms of first-year writing requirements, however, are wide-spread and varied. Rather than being regarded by students as an integral part of an undergraduate education, the course is often seen merely as a *roadblock* to be overcome prior to beginning their real academic program (O’Brien Moran & Soiferman, 2010). Similarly, Fosen (2006) found that students seem to see first-year writing courses as having little cultural meaning or worth; these courses “construe writing as a remedial skill that must precede even the foundational work of students’ other general education courses” (p. 20). The students’ skepticism may be well founded. Maxwell (1997) found that “most students stumble through composition courses, accumulating letter grades and credit hours, without learning to write well” (p.1).

Writing requirements at Canadian universities are a more recent phenomenon and are still more ad hoc than is the case in the United States. Hunt (2006) found “that there’s nothing remotely resembling the situation in the U.S., where universities have offered, for many decades, mammoth programs designed to administer writing instructions to either all or most of their first-year students” (p. 371). The curriculum design of writing programs in Canada also differs from those in the United States with a “baffling variety of writing courses, centres, programs, and

degrees offered at Canadian universities” (Graves & Graves, 2007, p.1) operating to meet the needs of undergraduate students. Graves and Graves (2007) report that “almost any approach to teaching writing has been or currently is being taught somewhere in Canada” (p.1), with competing programs sometimes operating within a single institution. An important distinction between writing instruction in American colleges and universities and that in Canada is that Canadian universities, in most cases, focus on “academic writing rather than composition” (p.6). The focus on academic writing in Canada has favoured *writing intensive* courses that are offered by a wide variety of disciplines. As Smith (2006) found, ”writing instruction in Canada has been changing rapidly between 1995-2005, moving in the direction of inter-disciplinarity and toward the development of professional writing and rhetoric programs housed in various departments” (p.320). Bartlett (2003) observed that the main problem with this approach was the wide range of pedagogical preparation on the part of the instructors. Because of the wide disparity in the instructors’ training in the teaching of writing, some students received excellent instruction and others did not.

There is, however, recent research that identifies some of the features of effective writing programs for college and university students. The document *Framework for Success in Postsecondary Writing* (2011) suggested that the teaching of writing ought to be a core function of the post-secondary education system with writing development taking place over time as students encounter different contexts, tasks, audiences, and purposes. In particular, the *Framework* suggests that students will become better writers when they have the opportunity to practice writing across the curriculum throughout their education. The report identifies a number of core competencies that are required if a student is to learn to write across curriculum. These competencies are:

- Rhetorical knowledge – the ability to analyze and act on understanding of audiences, purposes, and contexts in creating and comprehending texts.
- Critical thinking – the ability to analyze a situation or text and make thoughtful decisions based on that analysis, through writing, reading, and research.
- Writing processes – multiple strategies to approach and undertake writing and research.
- Knowledge of conventions – the formal and informal guidelines that define what is considered to be correct and appropriate, or incorrect and inappropriate, in a piece of writing.
- Ability to compose in multiple environments – from traditional pen and paper to electronic technologies. (p.1)

It is worth noting that most of the aspects of composition that the report identifies as being important to a student's success depend upon the student's ability to make critical decisions about the development of meaning within a specific context.

Similarly, in their meta-analysis of writing instruction, Graham and Perin (2007) found that teaching students to employ writing strategies was the most effective instructional method for adolescents in grades 4-12. Writing quality was defined in terms of coherence, organization, development of pertinent ideas, use of supporting examples, and provision of appropriate detail. Graham and Perin identified eleven possible writing techniques that had been studied in previous research. They then calculated an effect size for each technique to determine those with the greatest efficacy. The technique that had the largest effect size ($d = .82$) for the improvement of writing ability was the use of writing strategies. This relatively large effect size indicates that, when students were given direct strategy instruction, they outperformed the control groups by

more than 29 percentile points (that is, the control group performed at the 50th percentile while the strategy instruction group performed at the 79th percentile). Graham and Perin (2007) defined writing strategy instruction as the practice of explicitly and systematically “teaching students strategies for planning, revising, and editing their compositions” (p. 4).

This review of literature is meant to investigate the history of college and university writing instruction in North America, the difficulties faced by novice writers in unfamiliar writing environments, and the potential of explicit instruction in decision-making strategies to improve student writing performance. It is organized in the following way: (a) a discussion of college/university level writing historically; (b) a review of the practices of teaching writing at a college/university level, (c) a discussion of the challenges students face in acquiring competence in the practice of writing at a college/university level, and (d) a discussion of possible strategies for addressing those challenges.

History of Rhetoric in American Colleges

In *Rhetoric and Reality*, Berlin (1987) traced the history of writing instruction in American colleges from 1900-1985 describing the changes in the field of composition and rhetoric over the years and discussing the influences that led to the increase in the number of composition classes that were offered in universities during the period from 1940 to 1974. It was during the 1950's that rhetoric as a discipline gained popularity with the composing process emerging as a matter of particular significance to scholars. Berlin called the period from 1960 to 1975 the renaissance of rhetoric. This period was characterized by: the professionalism of composition instructors, the rise in graduate programs dealing with rhetoric, the return of rhetoric to the English department, and a new interest in the composing process.

In the 1960's, three major approaches emerged to dominate rhetorical theory and practice

in the field of composition. Berlin (1982) held that the rhetorical theories differ from one other in their understanding of writer, reality, audience, and language and in their understanding of the relationship among those elements. In addition, Berlin noted that the three approaches operate with a different understanding of the composing process, different rules about what can be known, a different understanding of how things might be known, and a different sense of how things might be communicated. Berlin classified the three theories as: objective rhetoric, subjective rhetoric, and transactional rhetoric. Berlin argued that all three of the rhetorical approaches were represented in composition and rhetoric research.

Objective Rhetoric

In objective rhetoric, reality is believed to exist in the external world and material objects. It is dominated by a concern with correctness in writing forms. Berlin (1987) argued that the composing process must be made explicit to both the student and the instructor, with rubrics guiding attention to form and content. Bloom and Bloom (1967), and Zoellner (1969) were influential in arguing that instructors had to pay attention to the actual writing act and provide explicit instruction to their students.

Berlin (1987) observed that, according to objective rhetoricians, “the successful writing act should be analyzed in terms of its sequence of observable behaviour, and students should be directed to engage in this sequence, with rewards attending successful performance” (p. 140). Instructors who employ the objective rhetoric method operate using a system of rewards and punishments. However, because instructors are working from the evidence of student behaviour, with little access to the internal cognitive processes, it is never entirely clear which stimuli and which responses are operating in any particular student’s writing process. Thus, it is difficult for instructors to reward and to punish appropriately.

Bloom and Bloom (1967) divided the writing process into three areas: generating ideas, construction of the paper, and self-evaluation. These also included the traditional rhetorical categories of audience and purpose. In the objective rhetoric, instructors tend to spend little time instructing during the pre-writing stage and instead focus on the post-writing critique. The authors observed that the goal of instruction is to allow students to eventually become self-sufficient and responsible for their own work rather than relying on the instructor for approval and judgment. It is difficult to see how that development is meant to occur. Because instructors' comments are often ineffective, and sometimes even counter-productive, students are often left to discover their own writing strategies without necessarily developing any greater understanding of the process. As Berlin (1987) stated, instructors "cannot be sure their comments are reinforcing the desired kinds of behaviour because they do not know what kinds of behaviour are desirable, they simply do not know how good writers write" (p. 141).

Zoellner (1969) was convinced that most of the students' difficulties in writing had to do with instructors' failures to foreground the process of writing. The discrepancy between the way in which students think and the way in which they write requires that instructors find a way to connect the two. He proposed that instructors replace the think-write metaphor with a talk-write metaphor. Because talk is behavioural and can thus be observed and manipulated (unlike thought, the processes of which are unobservable and difficult to manipulate), it provides both the student and the instructor with access to the student's work as it emerges. This emphasis was important to Zoellner, who believed that instructors should stress the process of writing and not just the final product. In Zoellner's model, students are encouraged to engage in the act of writing rather than trying to incorporate certain qualities deemed necessary for writing or writing to follow a particular model. It also stressed the social nature of writing by teaching writing

within a social environment. In this environment students would be encouraged to talk out their ideas, write them down, and receive immediate feedback from instructors and peers.

Objective rhetoricians generally hold that the most important aspect of the writing process is the post-writing step. It is at this point that instructors provide feedback to the student, which may or may not prove helpful to further composition. In addition, instructors of the objective school believe that, in order to develop, students should be rewarded for good work or, alternatively, punished for work that did not meet an appropriate standard. However, because instructors were often unable to articulate precisely what it was that constituted good writing, it was difficult for them to explain the criteria for their assessment of an essay. These seem to be a significant difficulty in the pedagogy of objective rhetoric: if there are no clear guidelines as to what might be expected by an instructor, students are unable to modify their behaviours to accord with the instructor's expectations.

Current-Traditional Rhetoric

Berlin (1987) observed that current-traditional rhetoric has been the most pervasive of objective rhetorics of the last hundred years, and has been the most dominant rhetoric overall. The current-traditional rhetoric appeared in English classes in the late nineteenth century. It provided an alternative to the tradition of rhetoric that had dominated instruction prior to this time: a tradition in which the teaching of rhetoric was based on classical studies. Berlin suggested that a defining feature of current-traditional rhetoric is that it located the writer in the material world and relied for content on that which the mind could perceive through sensory impressions. By collecting data from the world and making generalizations about it, observers could arrive at reasonable claims. The role of the observer was to be as objective as possible and to guard against factors that might interfere with the analysis of sensory perceptions of the

external world. Berlin (1987) observed that “once the truth has been determined through observation, the next step is to find the language to describe one’s discoveries” (p. 8). Language was then used to translate the original non-verbal experience of the writer to the audience in a manner that captured the original experience as closely as possible. The writer’s task was to be objective in translating the experience to the audience. The audience, which operated outside of the meaning making act, was assumed to be objective in its reception of the text. The role of the audience was to re-live the original experience as the writer reported it.

Current-traditional rhetoric is a general theory of composition that posits that good writing is objectively verifiable and not dependent on audience, genre, or purpose. The pedagogy of this approach privileges surface features of the text such as grammar, style, and organization. Expert writers are those who can write in such a way as to demonstrate their respective abilities to master the stated criteria for quality. Current-traditional rhetoric emphasizes the genre of exposition and its constituent forms like analysis, classification, and cause and effect. Writers are expected to guard against the danger that language will distort the observation that is being communicated, always remembering that the purpose of language is to reproduce the original experience of the observer in an as objective manner as possible. The writer’s language, therefore, is expected to conform to particular standards of usage, ensuring that the reader’s reception of the text will not be affected by the medium of transmission.

The role of the instructor is to teach students how to transcribe their observations in a manner that is clear, precise, and well-organized. The careful organization of the observations is important because it ensures that the reader will be exposed to as close a reproduction of the writer’s original experience as possible. The instructor was also expected to teach a style of writing that reflected the writing conventions of an established social class. On the other hand,

because first-year composition courses do not usually focus on academic literary criticism, the rhetoric that has emerged from them is perhaps more sparse than the rhetoric found in most academic English courses. Current-traditional rhetoric continues to operate in most North American English departments to this day, reflecting the deeply rooted influence of first-year composition courses in the United States.

Subjective Rhetoric

In subjective rhetoric, truth is believed to derive solely from within the individual rather than being external to the individual. This rhetorical approach is characterized by an emphasis on expressionistic writing and includes both writing as an aesthetic activity and writing as therapy. Instruction is informed with the belief that reality is a personal, private construction, and that writing is a process of personal discovery for the writer. Some of the major researchers in this area (e.g., Murray, Gibson, Coles, and Elbow) hold that, though writing can be learned, it cannot be taught. Accordingly, the obligation of the instructor is to create a learning environment that allows students to arrive at their own vision of reality (Berlin 1987).

Rohman and Wlecke's (1964) study established the importance of investigating the processes of writing (i.e., prewriting, writing, and re-writing in composing) with a particular emphasis on the prewriting stage. To some extent, their work has come to influence the research of objective rhetoric, subjective rhetoric, and transactional rhetoric. In addition, however, Rohman and Wlecke were interested in investigating writing as a process of discovery with a particular emphasis on the discovery of the self. They believed that writing was an art that originated within the writer, authenticating and affirming the self. In order for students to discover their own authentic voices, Rohman and Wlecke asserted that students had to be free to write often using the free-writing method.

Similarly, Elbow (1973) theorized that growth in writing is always personal, with writers working to free themselves from what they presently think, feel, and perceive. Elbow believed that writing allows the student to develop a personal understanding of the self, which Elbow identifies as the process that involves a dialectical relationship with a variety of elements. Language, in addition to providing the means by which individuals interact with others, provides a vehicle through which writers might interact with themselves.

If the pedagogy of subjective rhetoric were to be characterized by a single axiom, it would be that, though writing can be learned, it cannot be taught. According to Murray (1978), the writer is an individual who uses language to discover meaning in experience and communicates that experience. Subjective rhetoric focuses on the “dialectic between the individual and language as a means of getting in touch with the self” (Berlin, 1987 p. 153). The role of an instructor is to create a learning environment in which students are able to develop as writers, using such methods as free-writing, rewriting, and journal writing. If, as the instructors of subjective rhetoric would maintain, the purpose of writing is to capture one’s unique personal response to experience, then the “writing activities in the classroom are designed to teach students to use language in arriving at their own vision of the real, to increase their ability to call on all the resources of language in discovering their personal interpretation of experience” (Berlin, 1987, p. 153).

In subjective rhetoric, instructors generally follow a process model of writing, with composition occurring through the stages of pre-writing, writing, and re-writing stages. In this view, the pre-writing stage is emphasized (as distinct from objective rhetoric, in which the post-writing stage is seen as the most important). Students are encouraged to write freely, without concerning themselves with revision or editing until they have completed their writing.

Transactional Rhetoric

Theorists of transactional rhetoric generally argue that reality is the product of both the observer and the observed – the private and the public – and that it emerges through an interaction of the two (Berlin, 1987). Meaning is constructed through negotiation between subject and object, and it is mediated by audience and language. Transactional rhetoric:

discovers reality in the interaction of the features of the rhetorical process itself, in the interaction of material reality, writer, audience, and language. The differences between the various types of transactional rhetoric lie in the way each of these elements is defined and, more importantly, in the nature of the relationship between the elements. (p. 155)

Berlin observed also:

Transactional rhetoric is based on an epistemology that sees truth as arising out of the interaction of the elements of the rhetorical situation: an interaction of subject and object or of subject and audience or even all the elements—subject, object, audience, and language—operating simultaneously. (p. 155)

Berlin further divided transactional rhetoric into three forms:

Classical rhetoric which is concerned with rationality, emotional and ethical appeals, and evaluated using holistic grading. Classical rhetoric, as it was defined by Aristotle, included all the elements of the “rhetorical situation: interlocutor, audience, reality, and language” (Berlin, 1987, p. 155). This form of rhetoric regards “reality and the mind of the interlocutor as inherently rational . . . operating according to the strictures of Aristotelian logic” (p. 155).

Corbett (1963), who argued for classical rhetoric, held that the aesthetic and the moral must be included in the rhetorical act. He held that an effective rhetoric was one “that includes invention, arrangement, and style, guiding the student at every step of the composing act” (p.

164). Corbett maintained that classical rhetoric “addresses the whole person, providing for the rationale, emotional, and ethical appeals” (p. 164). Classical rhetoric also requires that the writer understand the role of audience in shaping the discourse. Corbett’s model was offered as a counter-point to the view of writing as self-expression, instead asserting that “what most of our students need, even the bright ones, is careful, systematized guidance at every step in the writing process” (p. 163).

Cognitive rhetoric which is concerned with understanding the way in which students perform cognitively while writing, is also concerned with the role of reality, audience, purpose, and language. Cognitive rhetoric is grounded in cognitive psychology (Berlin, 1988). Berlin reported that, for theorists of cognitive rhetoric, “the structures of the mind correspond in perfect harmony with the structures of the material world, the minds of the audience, and the units of language” (p. 480), and that learning to write “requires the cultivation of the appropriate cognitive structures so that the structures of reality, the audience, and language can be understood” (p. 159). However, Berlin (1987) also observed that “while the mind is made up of structures that develop naturally, it is necessary for the individual to have the right experiences at the right moment in order for this development to take place” (p. 159). Thus, an understanding of the individual’s environment is just as important to the acquisition of writing proficiency as the understanding of the individual’s cognitive processes.

Emig (1971) was one of the first to study the efficacy of this school of rhetoric. She conducted her research with twelfth-grade students using a case study approach. She was especially interested in addressing the process of writing rather than the product. Emig saw the stages of writing as being recursive rather than linear. She observed the stages of writing to be similar to Rohman and Wlecke’s (1964) study. These stages included prewriting, writing, and

re-writing. The seminal research in this area, however, was conducted by Flower and Hayes (1981), in their study of the writing choices made by experienced and inexperienced writers during the writing process. In their article *A cognitive process theory of writing*, they identified three stages of mental processes that they believed to constitute the writing process: the planning stage, which is further divided into generating, organizing, and goal setting; the translating stage, which is the point at which thoughts are put into words; and the reviewing stage, which is comprised of evaluation and revision (Berlin, 1988). Flower and Hayes (1981) argued that the process is hierarchical, by which they meant that the components of the process are embedded in the other components, and it is recursive, by which they meant that the stages can repeat themselves in no predetermined order. Flower and Hayes also found that writing is a goal-directed process, and that experienced writers operate with a coherent underlying structure when they compose. In addition, Flower and Hayes discovered that good writers work with a large repertoire of strategies that they employ at various stages during the composing process. Experienced writers are able to monitor their own writing as they compose and can change and adapt their strategies as needed. In essence, they guide their own creative process.

Social-Epistemic rhetoric is generally characterized by the belief “that rhetoric is a serious philosophical subject that involves not only the transmission, but also the generation of knowledge” (Leff, 1978, p. 75). Berlin (1987) claimed that “rhetoric is epistemic because knowledge itself is a rhetorical construct” (p. 165). As with other forms of transactional rhetoric, knowledge is seen as dialectical with meaning emerging through interaction. However, in social-epistemic rhetoric, there is a greater emphasis on the degree to which language constructs the writer, the audience, and the material reality. It is important, therefore, that writers foreground the perspective from which they write for their audience. Berlin (1988) found that for “social-

epistemic rhetoric, the real is located in a relationship that involves the dialectical interaction of the observer, the discourse community (social group) in which the observer is functioning, and the material conditions of existence” (p. 488). Meaning is not located in any one of the elements individually but rather in the dynamic dialectic of the three. As Berlin reported, “this dialectic is grounded in language: the observer, the discourse community, and the material conditions of existence are all verbal constructs” (p. 488). Berlin defined social-epistemic rhetoric as a “political act involving a dialectical interaction engaging the material, the social, and the individual writer, with language as the agency of mediation” (p. 488). Importantly, because language is a social phenomenon constructed by society, it is therefore specific to a particular time and culture.

Straw (1990) reported that, in transactional rhetoric, the emergence of meaning begins with the recognition of objects, or other signs, which have the potential to signify. A transactional view of language assumes that meaning does not reside solely either in the environment or in the mind of the language learner. Language is seen as open, and meaning is seen as triadic, the result of a mental setting actively attempting to make sense of a print setting. Meaning is constructed from text, and transactions between the reader and the text permit a tentative construction of meaning. The role of the reader is highly active; it makes what the reader brings to the text as important as the text itself.

Corbett (1963) outlined a model identifying the stages one follows in the composing process of classical rhetoric. He reported that classic rhetoric requires attention to invention, arrangement, and style, with students being guided at every stage of the composing act. The speaker (writer) is “intent upon persuading an audience . . . using the logical proofs [and] also affecting the appropriate emotional response in the audience and about inducing the audience’s

confidence in his good sense, good will, and virtue” (p. 162). Because it is the audience that gives form to the discourse, the writer must keep in mind the audience toward whom the discourse is directed. Corbett also states that students are most likely “to produce a unified, coherent piece of writing when they are forced, before they begin to write, to state their thesis in a single declarative sentence” (p. 162). He compared the act of composing to oral rhetoric of Aristotle identifying the similarities between the two: the introduction, the statement of facts, the confirmation of the case and the refutation of the opposing case, and the conclusion. The writer also has to adjust the way in which s/he handles “his purpose, his subject, his audience, his own skill, reputation, and personality. . . to help him determine what he must select from the available material, and how he will arrange what he has selected [sic]” (p. 163). Though a system of rhetoric cannot tell the writer how to choose material or how to organize the material, “it can lay down general principles to guide [the writer] in strategically adapting means to [an] end” (p. 163).

Writing in the 1960’s, when subjective rhetoric was believed to be the means by which students might find their authentic voices, Corbett (1963) wrote that classical rhetoric was thought to be too narrow a discipline because it was confined to argumentative discourse. However, Corbett argued, classical rhetoric is the rigorous, disciplined system of composition that is most effective for most first-year students. He stated that students need “careful, systemized guidance at every step in the writing process” (p. 164), and he believed that classical rhetoric provided the type of guidance needed.

An Overview of College Writing

Booth (1963) defined rhetoric, in general, as “the art of finding and employing the most effective means of persuasion on any subject, considered independently of intellectual mastery of

that subject” (p. 139) and suggested that successful rhetoricians are dependent on years of practice and experience. However, Booth believed that students could be trained in the practice of rhetoric by focusing on a limited number of rhetorical features. In order to guide students in the practice of rhetoric, instructors needed to strike a balance between the three elements that Booth identified as being at work in any communicative exchange: “the available arguments about the subject itself, the interests and peculiarities of the audience, and the voice, the implied character, of the speaker” (p. 141). He further suggested that “it is this balance, this rhetorical stance, difficult as it is to describe, that is our main goal as instructors of rhetoric” (p. 141). In addition, he pointed out that, in order for students to learn to write well, they had to learn “to see a question which they consider worth answering, or an audience that could possibly care one way or the other” (p. 142). Booth believed that a writer would only succeed in changing the reader’s mind if the following conditions were met: (a) the writer knew more about the subject than the reader did; and, (b) the writer engaged the reader in the process of thinking and feeling. The difficulty in translating Booth’s insights into pedagogical practice, however, lay in the sheer volume of information required for a student to address the rhetorical problems he identified.

Argumentative Essay

Argumentation has been a fundamental element in the study of rhetoric from the time of Aristotle (Fulkerson, 1996). It generally employs a reasoning structure known as the syllogism which “consists of two statements called premises, which share a common term and a prescribed grammatical structure (involving two nouns and a linking verb), plus a conclusion with that same grammatical structure (Fulkerson, 1996, p. 10). If the syllogism is valid, the veracity of the two premises guarantees the veracity of the conclusion. Fulkerson (1996) defines argumentation as “a full discourse designed to establish a position by rational support. An argument . . . is a

textual product. It is composed of levels of sub-arguments going all the way down to specific factual evidence” (p. 16). Fulkerson suggests that “it is vitally important that high school and college students learn both how to argue well and to critique the arguments of others” (p. 16).

Of particular importance to this study is the Toulmin (1958) model of argumentation. Toulmin claimed that all arguments had the same general elements. They begin with accepted data and move through a warrant to a claim. According to Toulmin “the data are the facts that are cited as premises or support. The claim is the argument’s conclusion and the warrant is a general operating principle . . . allowing a bridge to be made between data and claim” (as cited in Fulkerson, 1996, p. 18). For teachers of rhetoric, Toulmin’s model offered an advantage that was often missing in other forms of argument. Toulmin stressed the importance of qualifying the assertions in one’s argument, using adverbial phrases in the claims to indicate the strength of the relationship of the warrant to the claim. In addition, the Toulmin model is characterized by the inclusion of a counter-argument that identifies circumstances under which the data might not lead to the conclusion offered. Toulmin’s model simultaneously provides a structure that participates in the familiar syllogistic form and the latitude to explore ideas that may not fit neatly within the structure.

Hillocks (2010) argued that the teaching of critical thinking and argumentation is essential if students are to acquire an understanding of the rhetorical structures that inform academic discourse. He also suggested that, in order for students to develop proficiency in academic writing, they have to learn to look at information in a new way. Information is meant to serve a larger purpose. They also need to understand that a syllogistic pattern of organization is woven into the academic discourse. In other words, according to Hillocks (2010) “the process of working through an argument is the process of inquiry and of learning” (p. 26). Participation

in the academic discourse requires that students learn to develop an argument and sustain the logic of their respective positions through the exploration of premises to conclusion. Wu (2006) theorized that, in order for students to write argumentative essays effectively, they had to learn to analyze and evaluate content knowledge, selecting relevant supporting resources, and demonstrating the way in which those sources could be used to strengthen the writer's position. Wolfe (2011) argued even more strongly for the value of the argumentative essay. He suggested that, when a "person composes or comprehends a written argument, she or he makes use of an argumentation schema, a learned, culturally derived set of expectations and questions about argumentative texts" (p. 195). He also found that the assignments in academic environments - typically thesis-driven argumentation essays - tend to conform to a familiar pattern of organization: students are asked to write essays in which they develop and support a central thesis using evidence. In his study of undergraduate writing assignments across the curriculum of a major university in the United States, Wolfe observed that argumentation skills are highly valued across the curriculum and that thesis-driven arguments were the most common rhetorical form. He noted that the process of argumentation served not only to justify propositions but also to facilitate the creation of original knowledge.

Wyandotte (1996) maintained that students who are taught the process of argumentation gain access to a new arena of challenging ideas and competing discourses. She suggested that instructors design argumentative writing around problems of decision-making to ensure that students acquire a procedural understanding of argument. She hypothesized that writers experience argument as an activity as well as an idea and that this leads them to better understand the dynamic by which "reasonable people reach different conclusions" (p. 221). The collateral benefits of learning to write an argumentative essay include the development of skills

in conducting research, in annotation, in evaluation, and in documentation.

Blau (2006) argued that “it is the discipline of writing or writing practices as a discipline of mind that makes writing the most effective tool for discovering and clarifying thought and thereby the principle instrument for intellectual discourse” (p. 375). In essence, Blau contextualized the practice of college writing within the general discourse of the college/university milieu. One of the principal discourses taught in college/university is the argumentative essay (Hillocks, 2010; Lea & Street, 1998; Nesi & Gardner, 2006; Quilligan, 2006, Wingate, 2012, Wolfe, 2011; Wu, 2006). Lea and Street (1998) stated that the development of an argument is regarded by academics across the disciplines as a key feature of successful essays. In their survey of assessed writing in twenty disciplines, Nesi and Gardner (2006) found that instructors judged the value of an essay on the basis of the degree to which students were able to display critical thinking and development of an argument within the context of the course. Quilligan (2006) suggested that the emphasis on the argumentative essay stands in sharp contrast to high school writing in which students employ a thesis statement to introduce the topic, but do not, necessarily, focus on, or develop, an argument from that thesis. He argued that, in order to be successful, first-year students needed to learn to alter their writing practice from that of merely reporting of information to critical analysis. He further suggested that, by teaching students to construe academic writing as argument, instructors enable “students to be better able to understand the sort of writing that is expected of them, and . . . [to] proceed with that writing – argument based, evidential, and original” (p. 300). Bloom (2006) also identified academic writing as being primarily rational and evidence-based, saying that “the academic writer, from student on up to faculty researcher, is constrained to write rationally, to produce nonfiction prose usually construed as expository or argumentative writing, critical or

otherwise” (p. 73). She was of the opinion that “the writer should be able to distinguish fact from opinion, take a position, and make claims derived from supporting evidence based on verifiable and reliable facts” (p. 73). According to Bloom, “all academic writing has a point of view and presents an argument, explicit or implicit, and evidence to reinforce the author’s bias” (p. 74).

Not surprisingly, then, the argumentative essay has become the essay of choice for most instructors in a college/university setting (Bloom, 2006; Booth, 1963; Hillocks, 2010; Quilligan, 2006, Wingate, 2012, Wolfe, 2011; Wu, 2006). The popularity of the argumentative essay in first-year composition courses was demonstrated by Knoblauch (2011) who conducted a brief survey of the top three textbook publishers in the writing field. He looked at the list of books offered on teaching writing and found that there were over three hundred and twelve textbooks in circulation in August 2010 that dealt with argumentative writing. Similarly, Higgins (1993) found that “college students are often asked to develop arguments that address the questions and problems raised in their courses” (p. 70).

Unfortunately, that expectation often goes unmet. When instructors are assessing student papers, they find that students simply report on the source texts without arguing any particular position. Higgins hypothesized that, when students enter college or university, they:

may have little, if any, experience with formal written argument; the general writing preparation many students have had may not be relevant for the purpose of organizing sources around an argument, one of the most highly rated college writing skills identified by university faculty. (p. 70)

In addition, Higgins reported that:

instead of organizing source evidence around a claim, some students simply list, or

display these ideas; they insert quotes, facts, or data from sources without elaborating this evidence or offering warrants that link the source ideas they cite to the claims they have made. (p. 73)

Students seemed not to realize that, in order to write an argumentative essay, they had to construct a framework or set of goals in response to the rhetorical demands of the assignment. Higgins (1993) found that students needed to learn to interpret, and restructure, source ideas to produce relevant claims, and then to construct a chain of reasoning that linked the source data to their claims. According to Higgins, however, “college writing instruction does not emphasize this stage of invention, but instead focuses on the written product, the formal parts and layout of a written argument, rather than the interpretive process one uses to create the written text” (p. 74). Some instructors do teach students to identify the various parts of an argument, such as “data, warrants, claims, and qualifiers” (p. 74) to identify certain argument techniques, such as the use of examples, and to avoid logical fallacies. However, this kind of instruction does not seem to provide students with the procedural knowledge they need to develop their own arguments. Though they may learn to recognize the parts of a well-formed argumentative exemplar, they are less likely to be able to transfer that knowledge to the planning of their own writing.

Wingate (2012) makes a case for the use of scaffolding structures and models when teaching novice writers, such as first-year students, to write argumentative essays. According to Wingate, the use of essay-writing models enables instructors, teaching assistants, and students to enter into meaningful dialogue about the process of argumentation on the basis of shared terminology and shared understanding. The use of the common model allows instructors and teaching assistants to illustrate their points more precisely, referring to the model to identify the points at which individual students are experiencing difficulties. The model can also serve as the

organizing principle for writing instruction, permitting students to develop a more holistic understanding of the requirements of a specific genre. Wingate suggests that the explicit teaching of argumentation will, in turn, facilitate explicit instruction in the respective role that elements like organization and style play in the success of an essay.

Writing across Curriculum

Writing across curriculum programs in the United States evolved in much the same way that first-year composition courses did: in answer to a perceived problem (Farris & Smith, 2000; McLeod, 1989). These writing across curriculum courses were seen as “quick-fix projects . . . [designed to help solve the] writing crisis [found in universities]” (Farris & Smith, 2000, p.52). The original writing across curriculum courses were designed to teach students how to *write to learn* in the various discourse communities found in universities. One of the difficulties with implementing the initial writing across curriculum programs was that “college-level faculty [had] had little training in how to teach, and spend little time discussing pedagogy with their peers” (McLeod, 1989, p. 339). Convincing instructors in the various disciplines that they had to move away from the lecture type class (i.e., situations in which students were passive learners) to class styles in which the student was a more active learner was another difficulty with the early programs. The early writing across curriculum programs began with faculty workshops that emphasized the specific strategies to improve student writing. These workshops later evolved to include instruction in both working and critical thinking. Thus, according to McLeod (1989), writing across curriculum programs employed writing both as a mode of learning and as a way to encourage analytical modes of thinking.

McLeod (1989) stressed that there is a need for an understanding of the term *writing across curriculum* if the program is not to devolve to a mere tinkering with existing courses

adding more term papers or providing more proficiency tests. She observed that writing across curriculum programs “must be tied with thinking and learning, one that will bring about changes in teaching as well as in student writing . . . WAC is not to be identified solely with writing proficiency” (p. 343). If writing across the curriculum is going to be successful, it is incumbent on each faculty to ensure that their instructors understand that teaching students how to write to learn in the various discourse communities is integral to their overall mission.

One of the difficulties the writing across curriculum movement faced was the fractured nature of the university environment. Universities are comprised of a number of different faculties, each with its own discipline specific knowledge and each with its own understanding of epistemology and rhetoric. In this diverse environment, however, first-year writing courses were meant to teach students to write in each of the disciplines as if there were no differences between the disciplines (Wardle, 2004). Wardle (2004) found that “people know and understand the genres used to mediate activity in their own disciplinary systems, but logically know little about genres that mediate activity in other disciplines” (p. 1). First-year writing courses have been typically taught by departments of English based, perhaps, on the assumption that the use of English is the prime focus of English departments. It is unrealistic, however, to expect English faculty members to be conversant in the subtleties of the different discourse communities that exist in each university or college (Farris & Smith, 2000). Soven (2000, as cited in Farris and Smith) has argued that “professionals in the field [instructors] should evaluate advanced writing in the major since they are more familiar than faculty in the English department with the content and stylistic conventions in their fields” (p. 52).

Similarly, Wardle (2004) has argued:

despite the fact that much research demonstrates just how different writing is in different

disciplines and just how differently writing is used across the university, FYC [first-year composition] teachers primarily in English departments are being asked to prepare students for the varied and complex ways the students will use writing over the next four years” (p. 1).

If the mandate of all first-year composition courses is to teach students to write in all disciplines, it would appear that mandate is complicated by the existence of very real differences in the epistemological assumptions and rhetorical protocols each discourse holds. First-year composition instructors are being asked to prepare students to operate in different genres in different disciplines when the instructors themselves may lack working knowledge in those disciplines (Farris & Smith, 2000).

Writing Intensive Curriculum

The term Writing Intensive Curriculum (WIC) is sometimes used synonymously with the term Writing across Curriculum (WAC). One of the major differences between the two approaches, according to Farris and Smith (2000) and Monroe (2003), is that writing across curriculum courses tend to be offered under the authority of the directors of WAC programs, and, thus, exist as distinct departments at many universities and colleges in the United States. By contrast, writing intensive curriculum “suggests that primary responsibility for and ultimate authority over writing rests with individual faculty situated in particular fields” (Monroe, 2003, p. 4). In addition, writing intensive courses do not instruct, as a rule, or provide students with instruction in writing but instead use various kinds of writing assignments to get students to think about the course content. Farris and Smith (2000) observed that:

in making the decision to require a course with a substantial amount of writing beyond freshman composition, schools are faced with either placing greater demands on the

English department to teach advanced writing courses emphasizing various disciplines or involving all departments in the teaching of writing. (p. 53)

Thaiss (1988) discovered that “at more and more schools, WAC means the writing-intensive or writing-emphasis courses taught within a major” (p. 91). He found that, though these courses might involve careful instruction of the writing process (i.e., prewriting, writing, editing), they could also simply reflect an increased word count in the course assignments. In addition, some of the exercises employed by instructors of writing-intensive courses may include journals, role playing, reading response logs, systematic note making, collaborative research, and debates, rather than the use of prolonged writing assignments.

Thaiss (1988) suggested that the problem with institution-mandated writing-intensive courses is that they are often implemented without faculty input or faculty development. This often leads to faculty resistance, with writing-intensive courses being taught by instructors who have no background in teaching or evaluating student writing. Another obstacle to increasing writing-intensive courses is the reluctance on the part of the students to take courses that are labelled writing-intensive. Thaiss found that “[students] will tolerate the one or two writing courses they need to graduate” (p. 95) but do not want to encounter writing demands in their other courses. Thaiss stated that, “as long as writing is presented as the production of more words, rather than as an essential tool of thought, then we can only expect that students will resent it as an imposition” (p. 95). Thaiss concluded that an “understanding of the process of writing and how to use writing to learn will allow students to handle any form, format, or criterion a teacher may throw at them, regardless of the discipline” (p. 96).

In order to establish Writing Intensive Curriculum courses, attention must be paid to teaching students:

both the cognitive (writing to learn) and rhetorical (learning to write) goals of Writing Across Curriculum programs, English-trained staff often find a need to place themselves inside the other academic disciplines, to learn about their subject matter, about their methods of study, and about what is valued in their writing. Without this immersion in other disciplines, WAC personnel run the risk of imposing their English-based perceptions on another field, perceptions that may not be all that conducive to producing Writing Intensive Courses that stimulate inquiry in disciplines other than their own.

(Farris & Smith, 2000, p. 59)

Monroe (2003) reported that the major differences between WAC and WIC is that writing in the disciplines, also known as Writing Intensive Courses, emphasizes disciplinary differences, diversity, and heterogeneity, while Writing across Curriculum courses emphasize the commonality, portability, and communicability of writing practices. He further states that “taken together, the two terms honour the importance of writing and communicating effectively with audiences situated both within and beyond particular fields of academic specialization” (p. 4). He contends that both Writing across Curriculum and Writing Intensive Curriculums have been instrumental in drawing attention to the importance of writing in all fields of education, in providing a link between undergraduate and graduate education, and in foregrounding the role that writing plays in the disciplines. However, he ultimately casts his lot with the WIC movement arguing that, because writing plays such an important role in learning, it should be “vested in the disciplines where this work takes place and in the faculty who are the ultimate arbiters and authorities . . . over what counts as effective writing in their respective fields” (p. 4). He claims that “a first-year writing requirement embedded in the disciplines signals that all writing takes place in particular contexts, for particular purposes and audiences” (p. 5). If

writing takes place in discipline specific courses, students will come to understand that writing is important to the learning in which they engage, rather than being either a remedial course or an impediment to be overcome. Arguing that “responsibility for writing at all levels of the curriculum properly belongs to the faculty hired to teach these fields” (p. 6), Munroe concluded that:

unless writing is fully integrated into the intellectually stimulating work that is attributed in higher education through the disciplines, students will not do their best writing, and instructors will not be reading and responding to writing they understand to be an integral part of their higher educational mission. (p. 7)

The fundamental difference between writing courses, such as first-year composition, and the Writing Across Curriculum/Writing Intensive Courses is that dedicated writing courses subordinate content to process stressing the “development of writing ability and metacognitive awareness . . . [as] the primary objectives” (David, Gordon, & Pollard, 1995, p. 525), while WAC/WIC courses subordinate the writing process to content using writing exercises as a means of teaching the content. David, Gordon, and Pollard (1995) further found that in writing courses classroom time was devoted to writing *as* subject and not to the writing *about* a subject. The role of the student is that of a writer, and the practice of learning to write well involves learning to make “rhetorically-sound decisions” (p. 526). By contrast, WAC/WIC courses are constructed to provide students the opportunity to master a body of knowledge through writing, “[tapping] writing’s heuristic power to make connections and achieve understandings that they may never have reached without writing” (p. 530). However, David, et al, (1995) point out that WAC/WIC courses are not writing courses, that is, courses in which the primary goal is learning how to write.

Overview of Writing Instruction

Writing instruction in college and university settings has proven to be more complicated than it may have appeared. Despite a century as a core element in American college curriculum, the study of composition continues to attract criticism (see Berlin 1997). Krause (2001) said that the “essay is a common form of assessment at university . . . and yet students frequently nominate this as among the more challenging of academic demands at university, particularly in the first-year” (p. 150). It may be that both students and instructors have conflated two sets of skills: (a) basic essay writing (e.g., the five paragraph essay); and, (b) the writing of academic essays. As Krause (2001) found, the difficulty students experience in learning to write at university derives, in part, from the need to acquire new literacy skills (e.g., the abilities to conduct research, engage in critical interpretation, and to develop arguments). In addition, novice writers often seem unable to manage the expectations and demands of their intended audience. Kruse (2003) found that, even when university students “have enough general language ability to meet the challenges of academic writing, they run a great risk of failure if their learning is not supported by substantial writing instruction also at the university level” (p. 21). For example, in one case study, Kruse found that the student was primarily concerned with knowledge-telling (see Bereiter and Scardamalia, 1987), rather than knowledge-producing. Kruse said that “an academic text appeared to her [the student] as a kind of container that has to be filled with knowledge, not as a means of purposeful communication” (p. 22). Flower (1989) stated that:

the writing process needs to be taught not just as a procedure or set of *natural* activities but as a purposeful cognition. Students need to be actively aware of the rhetorical goals behind a writing strategy and learn not only how to use a thinking procedure but when

and why it might be worth trying. (p. 156)

With no explicit instruction in the kind of reasoning required for academic essay-writing, students tend to revert to non-critical, formulaic models.

Russell (1995) found that:

conscientious writing instruction forces a teacher to explain (and to some extent conceptualize) the conventions of her discipline and – more difficult still – occasionally to describe how the conventions she requires on, say, a history paper, are different from the conventions a student is wrestling with on a chemistry or literature paper in another class. (p. 56)

He theorized that “ignoring writing instruction in the disciplines made it much easier for higher education to proceed in neat compartments, without confronting messy questions about the relationships between discourse communities” (p. 56). It also allowed them to ignore the questions about the way in which students should be able to use language once they graduate and enter the work force.

Fahnestock (1993), in discussing the importance of teaching genre in university, stressed that explicit instruction is needed if students are to learn how to become good writers. She discovered that the type of writing that gives students the most trouble in first-year university is the argumentative essay. She theorized that students have not had enough experience in composing “reasoned prose” (p. 270) or much instruction in argumentation. She discovered that “much explicit instruction, far beyond the *writing process* has been aimed at this problem, especially in second level or advanced courses” (p. 270). Fahnestock stressed that the teaching of writing strategies is “common across genre differences” (p. 270).

Hillocks (1986), in his meta-analysis of research on writing, reviewed studies that

focused on the modes of instruction in classrooms. He defined modes of instruction by “the role assumed by the classroom teacher, the kinds and order of activities present, and the specificity and clarity of objectives and learning tasks” (p. 113). He identified four different types of modes of instruction: presentational, natural process, environmental, and individualized. He found that the most effective mode of writing instruction was the *environmental* in which instructors give students specific criteria in the context of problem-solving (p. 122-123). The environmental mode is characterized by:

- clear and specific objectives, e.g., to increase the use of specific detail and figurative language;
- materials and problems selected to engage students with each other in specifiable processes important to some particular aspect of writing; and,
- activities, such as small group problem centered discussions, conducive to high levels of peer interaction concerning specific tasks. (p. 122)

Instructors who operated in this mode did not rely on lectures or teacher-led discussions, but instead focused on the development of procedural skill through application of knowledge. For instance, they gave short introductions to a topic, divided the students into small groups for activities, and then assigned individualized study for practice. The two most effective foci of instruction used explicit teaching modes: inquiry, which attempts to teach specific strategies of writing and scales which attempts to give certain characteristics of writing. Hillocks (1986) found that the principle advantage of environmental instruction is its focus on procedural facilitation. Environmental instruction also presents new forms, models, and criteria to facilitate the use of that information in various writing situations. There is an advantage in the fact that

environmental instruction presents new information in scales and criteria which are specific and localized, but an even greater advantage in the opportunities that environmental instruction provides for students to apply that information. Hillocks stated that, “students appear to gain a procedural or operational knowledge of the criteria which influences their own independent writing” (p. 224). Additionally, Hillocks’ found that the most effective teaching is explicit and the most efficient learning is situated rather than being decontextualized.

Hillocks (1986) discovered that the least effective method of teaching was the *presentational* mode, in which the instructor lectures about a topic in a decontextualized manner.

The presentational mode is characterized by:

- Relatively clear and specific objectives, (e.g., to use particular rhetorical techniques).
- Lecture and teacher-led discussion dealing with concepts to be learned and applied.
- The study of models and other materials which explain and illustrate the concept.
- Specific assignments or exercises which generally involve imitating a pattern or following rules that have been previously discussed.
- Feedback following the writing, coming primarily from teachers. (p. 116-117)

Williams and Colomb (1993) found that many instructors assume that students will apply what they learn more widely if the instructors “explicitly focus on larger scale genres such as academic discourse or research papers, rather than on features of genres” (p. 260). However, Williams and Colomb question whether “novice students can effectively focus their explicit learning on the general features of academic discourse while they write in specific genres, or

whether they learn the general category best only after they acquire more specific genre” (p. 260). Williams and Colomb suggest that instructors should explicitly teach novice writers the features of genres, not as rules that must be followed, but rather as choices to be made when writing. They further state that “it may be that explicit teaching is a necessary step in the process of empowering students to choose how they participate in the communities they encounter and to what degree they let that participation define who and what they are” (p. 262).

Wahlberg (1990) also found that explicit teaching was a necessary component of effective writing instruction. Lovitt and Young (1997) contend that the essay format is so flexible that it provides no guidance for the novice writer. Instructors have to teach students how to produce writing that proceeds logically toward a conclusion. Many first-year students have “no intuitive understanding of the necessity for linking ideas and have limited skills in the mechanics of managing transitions” (p. 120). In addition:

novice writers are always in the position of having to invent a genre for themselves, because genre does not develop into an enabling writer’s tool until it becomes familiar through reading and writing in a community that uses it in its own way and in its own time. (p. 124)

Stein, Carnine, and Dixon (1998) stressed the importance of using direct instruction to “increase not only the amount of student learning but also the quality of that learning by systematically developing important background knowledge and explicitly applying it and linking it to new knowledge” (p. 228). In fact, they reported that, “these effective teaching practices can be applied to any published curriculum and any instructional strategy, whether rote, or complex, or any content area” (p. 228). They also found that direct explicit instruction is useful for teaching generalizable strategies by scaffolding the instruction to meet the needs of the

students. The authors identified five key curriculum design principles, all based on empirical research that underlie all direct instruction programs: “identify *big ideas* (italics added) to organize content; teach explicit, generalizable strategies; scaffold instruction, increase skills and concepts; and provide adequate review” (p. 228).

Troia and Graham (2002) examined the effectiveness of a highly explicit teacher-directed instructional routine used to teach three planning strategies for writing to fourth and fifth graders with learning disabilities. When compared to students who received process writing instruction, that authors found that the students who received direct-explicit instruction in planning produced stories that were qualitatively better. The authors chose planning as the instructional strategy based on research indicating the importance of planning as a component of effective writing. Flower and Hayes (1981) reported in their study of novice and experienced writers that experienced writers develop goals to help guide their composing process whereas novice writers do not. The amount of planning that experienced writers employ before beginning writing helped them generate and organize their writing to meet their objectives.

In contrast to experienced writers, Kellogg (1987) found that college students spend only about one quarter of their writing time planning what they are going to say and how to say it. McCutchen (1988) discovered that college and university students typically plan as they write, writing down everything they can remember about the subject no matter how relevant, and using each idea to stimulate the generation of the next one. Troia and Graham (2002) hypothesized that one way to get students to integrate planning into their writing is to “directly teach these students planning strategies that can be used during or in advance of writing . . . [T]his approach has been quite successful, as explicit instruction in planning strategies has resulted in improved writing performance for students” (p. 290).

Segev-Miller (2004) conducted a study to investigate the effect of explicit instruction of relevant strategies and assessment criteria on the subjects' ability to connect content from source texts to their own texts. She based her study on the theory that "writing from sources is a common academic task requiring students to select, organize, and connect content from source texts as they compose their own new texts" (p. 5). The subjects were twenty-four in-service teachers who were enrolled in a course on *Reading and Writing to Learn*. Participants were assigned the same synthesis task, which was a review of the literature, conducted before and after the course. The students were required to document their two performances of the task by keeping a process log to document their pre- and post-instruction processes and to discuss the differences between the two. The author did a content analysis of the participants' process log summaries and also evaluated the participants' critical self-assessments. In her discussion of the two documents, the author indicated that according to the participants' self-evaluation, they reported significant improvement in their post-instruction discourse synthesis processes and products.

Segev-Miller (2004) suggested that for "explicit instruction to be effective, it should consist of more than one strategy; it should consist of metacognitive strategies and cognitive strategies relevant to the performance of the task" (p. 8). She noted that students' metacognitive strategies gradually improved over time with explicit instruction. The participants attributed their improvement in their post instruction processes to the effect of explicit instruction in terms of three major categories:

- knowledge of task representation as knowledge-transforming, of metacognitive and cognitive strategies relevant to the performance of the task, and of assessment criteria;

- motivation and self-efficacy, which resulted in the subjects' ability to manage the task and to transfer their learning from the course to other contexts; and,
- self-reassessment as learners.

Class Size

One of the reported difficulties in teaching writing in a college or university setting derives from the challenge of teaching writing strategies in large lecture theatres. In most universities, it is not unusual to find students learning in lecture theatres that house more than one hundred students (Cuseo, 2007). This is particularly the case with first year courses. Cuseo (2007) hypothesized that learning in large class settings may be a difficult adjustment for students who are making the transition from high school to college or university. In addition to other challenges posed by the large classroom, the lecture format of teaching tends to cast the student as a passive recipient of information. In the absence of interactive exchange, students are obliged to simply adapt to the instructor's preferred method of delivering information, regardless of whether that method is optimal for, or familiar to, the student.

Types of Instruction

The various teaching methods instructors use in large lecture theatres can have an impact on student learning. Hogan and Kwiatkowski (1998) conducted a study to investigate the ways in which instructors adapt their teaching methods to larger class sizes. They found that instructors tended to concern themselves with the ways in which the information was transmitted, focusing on the use of technologies like PowerPoint slides, microphones, and overhead transparencies, and did not appear to focus to the same extent on the way in which the information was received. The authors did note, however, that some instructors divided the large group into smaller groups to effect a more "student-centred" approach that might encourage class

participation.

Cuseo (2007) said that first-year courses are typically lecture-centred with minimal student engagement and that, in such settings, instructors often expect little more than memorization of facts. Instructors acknowledged that they anticipated greater inattention in class, greater absence from class, and lower student performance when they were teaching in large classrooms. In his meta-analysis of studies of class size, Cuseo (2007) found that some of the characteristics associated with large-class sizes included:

(1) increased faculty reliance on the lecture method of instruction, (2) less active student involvement in the learning process, (3) reduced frequency of instructor interaction with and feedback to students, (4) reduced depth of student thinking inside the classroom, (5) reduced breadth and depth of course objectives, course assignments, and course-related learning strategies used by students outside the classroom, (6) lower levels of academic achievement (learning) and academic performance (grades), (7) reduced overall course satisfaction with the learning experience, and (8) lower student ratings (evaluations) of course instruction. (p. 2)

He also found that first-year students often spent up to 15% of their class time thinking about something other than the lecture and that their attention and concentration dropped off after 10-20 minutes of continuous lecturing. He reported that students who had the opportunity to interact in class with either the instructor or other students reported significantly higher levels of satisfaction with their learning experience than did students in classes that were taught exclusively by the lecture method. Cuseo concluded that lectures were effective for the teaching of information but did not promote changes in thought patterns, attitudes or behaviours.

Similarly, Halpern and Hakel (2003) reported that lectures in introductory college or

university courses were effective as a means to deliver information but not as effective in courses that required students to both *remember* and *understand* the material. Because understanding generally requires that students become active participants in the learning process, students in large lecture theatres need *cues* that can help them engage with the material dynamically. They benefit from teaching strategies like open-ended questions, questions that test for understanding, and examples that encourage students to relate new information to existing information. The authors concluded that the way in which instructors designed and directed learning activities had a greater effect on student learning than class size or format. In short, the effectiveness of instruction seems to correlate more closely with the nature of the activity than it does with the site of the activity.

On the other hand, the size of the classroom does appear to affect a student's sense of agency. Hogan and Kwiatkowski (1998) conducted a study of class sizes in a university in England to investigate the emotional impacts of large classes on students and instructors. They defined large class sizes as those with 150-400 students. They discovered that students in large lecture classes often report "a feeling of powerlessness, isolation, and a sense of an inability to reason and think appropriately" (p. 1407) and hypothesized that students in large lecture classes often become passive learners rather than active learners. According to Hogan and Kwiatkowski (1998), students did not feel obliged to participate in discussions in large classes because it was easier to disappear into anonymity. By contrast, in smaller tutorials, students were aware that they might be asked questions and thus tended to be more actively engaged.

Modified Instruction

Hattie (2005) conducted a meta-analysis of existing research to determine whether there was convincing evidence that the reduction of class size led to improved learning outcomes. He

concluded that there was little evidence to support the hypothesis that smaller classes, in and of themselves, had an effect on student performance. He discovered that many of the instructors who taught both small and large classes used the same teaching methods regardless of the class size. Similarly, Glass, Cahen, Smith, and Filby (1982 as cited in Hattie, 2005) reported that the nature of the instruction rarely changed when class sizes were reduced. Instructors who did not attempt to engage students in the learning process when they were teaching in a large classroom were no more likely to do so when they were teaching in a smaller classroom. Hattie concluded that “reducing class sizes may be but one means to these ends [enhancing student outcomes], although it does not appear to be among the most effective of all policies that could be introduced” (p. 419). Glass and Smith (as cited in Hattie, 2005) found that a reduction in class size led to close-to-zero change in levels of achievement between students in small classes and students in large classes. They did find, however, that there was a small effect size related to student attitude toward learning, teacher morale, and student satisfaction in smaller class sizes.

Some studies in educational literature (Carbone, 1998; Grunert O’Brien 2002) have identified strategies and techniques to improve the effectiveness of teaching in large classrooms. The studies suggest that it is important for instructors, even those teaching in large lecture theatres, to design activities that engage students in the learning process. Some of the activities suggested include the positing of open-ended themes, the use of questioning, and the discussion of issues and problems that relate to the course content in the lecture portion. In the small-group seminars students can be provided with opportunities to talk to peers, to formulate their thoughts in writing, and to respond thoughtfully and critically to diverse points of view.

Ehrenberg, Brewer, Gamoran, and Willms (2001) also found that class size matters only when teachers modify instructional practices to take advantage of the smaller class sizes. If

instructors do not alter their instructional practices, then student achievement is not affected. They concluded that “reducing class size, by itself, does not typically affect the instructional activities that occur in classrooms” (p. 23). Like Hattie (2005), they found that teachers’ behaviours often did not change with the size of classes. Class size, under such circumstances, was unlikely to have an effect on student achievement.

Optimal Class Size

There is some debate regarding the optimal class size for teaching composition to university level students (Cuseo, 2007; Fischer & Grant, 1983; Lammars & Murphy, 2002; Macomber & Siegel, 1960; McKeachie, 1980). However, the National Council of Teachers of English (2004, as cited in Cuseo, 2007) is the only group that has gone on record with specific recommendations regarding class size. Their report suggests the optimal class size for courses in college writing is 15 or fewer students. In addition, the NCTE endorsed the following standards concerning class size and teacher workload in college/universities: (1) classroom teaching should be limited to 12 hours a week to provide adequate time for reading and responding to students’ writing, and (2) class sizes should not exceed 20 students (although 15 is considered the ideal number). Cuseo (2007) suggested that, in classes that exceed 20 students, instructors cannot provide the immediate and individual responses necessary for students to improve their writing skills. Smaller classes offer students greater opportunity for participation, more individual attention, and improved instruction. In a meta-analysis of studies of the effect of class size in higher education, Fischer and Grant (1983) concluded that class size had little effect in classes in which the purpose was the delivery of information. Small classes appear to provide greater opportunities for success, however, when the subject matter concerns critical thinking, problem-solving, and long-term attitude toward the subject.

McKeachie (1980) reached a similar conclusion. He found that in classes where the imparting of declarative knowledge was the primary goal, class size was relatively unimportant. On the other hand, when the learning goals include the application of knowledge, smaller class sizes have a greater effect. Macomber and Siegel (1960, as cited in McKeachie, 1980) reported that the students who are the most likely to benefit from smaller class sizes are “(1) those with low motivation; (2) those unsophisticated in the subject-matter area, and (3) those predisposed to learn facts rather than to apply or synthesize” (p. 26). McKeachie found that large lectures are not inherently inferior to smaller classes when traditional achievement tests are used as a measure. He concluded, however, as Fischer and Grant (1983) did, that smaller classes are beneficial for teaching higher level thinking and the application of knowledge, and for effecting changes in motivation and attitude.

In general, research seems to indicate that class size is not, in and of itself, a critical factor in the success of students. The decision to lecture in larger theatres should be made on the basis of factors such as the number of students in the class and degree of student involvement required. Lammers and Murphy (2002) did not reach any conclusions about the relative effectiveness of lectures or seminars in terms of student achievement. Rather, they found that it was not the size of the class that impacted student learning but the techniques used by the instructor, the quality of the instruction, and the context in which certain techniques were used. The research on this point is not conclusive. There is no study that shows, unequivocally, an optimal class size.

The following section will discuss the possible influence of gender on the development of writing skills.

Gender

There have been a number of studies investigating the relationship between gender and writing performance. Murphy and Elwood (1998) examined the types of activities into which girls and boys engaged both within and beyond the classroom to determine whether those activities had an effect on writing achievement. They discovered that the way in which students learn outside the classroom influences their learning in the classroom. Murphy and Elwood suggest that “young children’s learnt gender preferences lead them to pursue particular interests which provide them with different learning opportunities and importantly align them in different ways to schooling and to subject learning” (p. 115). The gender preferences lead to differences in school performance that appear to be unrelated to students’ level of ability. However, Murphy and Elwood also noted that research “into sex differences in intellectual abilities continues to show a female superiority on certain verbal abilities” (p. 95). They report that “in international and national surveys girls have consistently been found to outperform boys in reading and writing across the entire 5-16 age range” (p. 100). They also suggest that this advantage in reading and writing continues into adulthood with females outperforming males.

Pajares (2003) found that “girls report[ed] stronger confidence in their writing capabilities than do boys, at least through middle school” (p. 148). He determined that:

a strong sense of confidence, for example, may serve students well in writing an essay because it engenders greater interest in and attention to writing, stronger effort, and greater perseverance and resiliency in the face of adversity. Confident students are also likely to feel less apprehensive and have stronger feelings of self-worth about their writing. (p. 140)

Similarly, Gambell and Hunter (2000) using data from a Canadian test of 13 and 16 year old

students found that “girls showed greater self-confidence as writers than did boys. Girls [also] adopted a more formal approach to writing (preplanning, revising, and editing) than did boys, particularly at age 16” (p. 314). White (1996) found that “the single most important factor in explaining girls’ superior performance in English was their control of the written language” (p. 100).

Peterson (2006) hypothesized that writing is a social practice shaped by gender and, accordingly, there are differences in the ways in which girls and boys acquire writing skills. She reported that studies of writing competence show a gender disparity favouring girls in the scores of large-scale writing tests. The tests, which were conducted via survey across grade levels in the United States, reveal important differences between the sexes in self-identified strengths. Girls reported that they had greater proficiency in the use of writing conventions and in the writing of descriptions while boys reported that they had greater proficiency in creative assignments and in the understanding of audience.

The 1994 Council of Ministers of Education Canada (CMEC) literacy study found that both 13 year old females and 16 year old females consistently outscored their male peers in literacy tests of reading and writing. The performance was measured using a scale called the School Achievement Indicators Programme which categorized student achievement, with 1 indicating lowest achievement and 5 indicating highest achievement. At 13 years of age, females outscored males (73% to 58%) on writing achievement; at 16, females continued to outscore males (86% to 77%). Gambell and Hunter (2000) reported that, in British Columbia, females scored higher than males in Grade 12 Communications, English, French, and literature. Females consistently won more Grade 12 scholarships, graduated at a higher rate, and achieved more Honours standings than males. Similarly, in Saskatchewan, female students outperformed their

male counterparts in every Grade 12 subject except mathematics. The difference was greatest in the two Grade 12 English courses where females received marks that were typically 6-8% higher than males. In Saskatchewan, females showed higher marks in every dimension of reading and writing in Grades 5, 8, and 11. In the Atlantic Provinces, the results were similar with females generally graduating from high school with higher writing skills. In New York, female students demonstrated superior high school achievement and better first-year college test outcomes than male students (US Department of Education, 1994 as cited in Gambell & Hunter, 2000).

National writing proficiency assessments in the United States indicate that, since 1984, female students up to, and including, Grade 11 have consistently outperformed males (US Department of Education, 1994 as cited in Gambell & Hunter, 2000). A similar trend was reported in Canada during the same time period.

Gambell and Hunter (2000) found that females are more likely than males to invest time in planning or outlining their work before beginning to write with 78.5% of 16 year old females reporting that they usually or always revise their work and only 62% of 16 year old males reporting that they revise their work. Pre-writing practices, in general, appear to be more prevalent amongst females than males. Gambell and Hunter also found that pre-planning in writing among males declines as they become older. They noted that curriculum and instruction do not appear to have the same impact on the development of the male students' writing strategies or processes. While female students developed a repertoire of writing strategies during their high school years, male students were less likely to do so.

The research appears to indicate that, at the elementary and high school levels at least, gender can be identified as a factor in student performance in writing. While the research does not speak directly to the performance of post-secondary students, the literature suggests that it

might be useful to consider the effect of gender while investigating the acquisition of writing skills at the first-year college or university level.

Challenges Experienced by Students in Acquiring Competence in the Practice of Writing

There are a number of difficulties faced by students in their quest to master the skill of writing. One of those challenges is the need to understand the difference between the recursivity of the writing process and the linearity of written product. The second challenge is the difference between novice and experienced writers in terms of working memory capacity. A third challenge derives from the need of the students to apply existing writing skills to new situations. Finally, the size of the classroom can affect first-year students' ability to learn. These challenges will be discussed below.

The Process of Writing and the Nature of the Text

One of the difficulties students face in college/university level writing is in understanding the difference between the recursive process of writing and the linear nature of the text as product. The complexity of the written product or text, with its linear structure and sequential logical coherence, had once led rhetoricians to assume that the cognitive process that produced writing was equally complex and equally linear (Murray, 1968). More recent research has suggested that this is not the case. In their cognitive process model of writing, Flower and Hayes (1981) rejected the older, more linear model of writing and argued that the following processes are more descriptive of the cognitive practices that produce text:

- Writing is best understood as a set of distinctive thinking processes, which writers orchestrate and organize during the act of composing.
- The processes of writing are hierarchically organized, with component

processes embedded within other components.

- Writing is a goal-directed process. In the act of composing, writers create a hierarchical network of goals and these in turn guide the writing process.
- Writers create their own goals in two key ways: by generating goals and supporting sub-goals which embody a purpose; and, at times, by changing or regenerating their own top-level goals in light of what they have learned by writing.

The writing process is dynamic and recursive and is often characterized by false starts and dead ends. Writers do not follow a linear path in their composing process but instead are observed moving back and forth through planning, generating, and reviewing (e.g., revising and editing). Writers monitor their text production actively and, as new information is discovered, previous assumptions are challenged and textual adjustments are made. As Galbraith (1996) observed, “writing is a dynamic, recursive process in which the writer continually evaluates ideas and texts with respect to rhetorical goals, and in which goals are modified as text is produced” (p. 121).

It is important to remember, however, that the cognitive process model is an abstraction, which describes a dynamic process in static terms. The writer does not compose with the model in mind but instead works through a series of discrete problem-solving activities at particular junctures in the text. What may appear, retroactively, to be an exquisite process of textual construction is, in fact, the result of a series of localized decisions. Simon (1969) argued, in his parable of the ant, the appearance of complex cognitive processes may, in fact, be better understood as a specific adaptation to the environment. In Simon’s (1969) parable, the ant’s path, though it seems irregular and convoluted, is guided by a purpose that is found in the

environment: the ant's goal is to find its way home.

Viewed as a geometric figure, the ant's path is irregular, complex, hard to describe. But its complexity is really a complexity in the surface of the beach, not a complexity in the ant. On that same beach, another small creature, with a home at the same place as the ant, might well follow a very similar path.

(Simon, 1969, p. 24)

Similarly, the writer has a goal that is embedded in the writing environment. However, just as the complexity of the ant's behaviour over time cannot be assumed to represent a correspondently complex cognitive process, neither should the finished essay or the retrospective accounts of writers be assumed to represent the thinking practice that leads to text production.

Working memory

The writing process, as formulated by Flower and Hayes (1981), is divided into three sub-processes of planning, translating, and reviewing. The relationship between these sub-processes is guided by the goals that the writer brings to the process. Brand (1989) believed that constraints are built into writers' goals and affect the process of reaching the goals. She identified three constraints: "insufficiently integrated knowledge, inadequate written speech, and excessive or unfamiliar rhetorical demands" (p. 22). She determined that, because the human mind can only store so much information, it is possible for the writer to experience information overload. In order to reduce the memory load while writing, experienced writers prioritize rhetorical goals and rely on cognitive processes that are so automatic that they require little thought (e.g., spelling, grammar conventions).

Kozma (1991) found that "the [writing] process is constrained by information in long-

term memory such as topic-relevant information, knowledge, and expectations of audience, and grammatical rules and rhetorical strategies” (p. 32). He suggested that the writing process is constrained by limited capacity in short-term memory. When novice writers are forced to use their short-term memory for non-automated skills related to grammar or spelling, “the space that is available for planning and rhetorical analysis is reduced. If capacity [of the short-term memory] is reached, ideas may be lost, goals may be forgotten, and performance will deteriorate” (p. 32).

In order to advance to the point at which they will be able to independently produce effective texts, novice writers need to learn to manage the complex series of decisions that Flower and Hayes (1981) described. As Sitko (1998) found, novice writers need to be taught explicitly how to identify the purpose of their writing, how to set goals for their writing, how to anticipate the readers’ needs, and how to monitor their own writing process. In addition to the difference between novice and experienced writers in terms of their access to a repertoire of writing strategies, there is also a difference in the relative demands on working memory. Because experienced writers have automatized much of their procedural knowledge about writing, they are able to use their working memory for decision-making. That is not the case with novice writers. McCutchen (1996) found that there are “capacity limitations which contribute to individual and particularly to developmental differences in writing” (p. 300). She proposed that it is:

within working memory that information (from the environment and from long-term memory) is stored during processing. Moreover, due to overall resource limitations within the system, trade-offs exist between working memory’s storage and processing functions. As more resources are devoted to processing functions, fewer resources are

available for storage of information. (p. 300)

Writing instruction, therefore, must address the difference between novice and experienced writers both in terms of access to decision-making strategies and of management of working memory.

McCutchen (1996) noted that it is important for writers to not only attend to their comprehension of the text but also to monitor the emerging text during the process of composition. These two cognitive processes (i.e., the process of accessing writing strategies and the process of active decision-making) can be memory intensive procedures which require significant demands on the working memory. In discussing the three main processing demands of planning, translating, and reviewing (see Flower & Hayes, 1981), McCutchen theorized that novice or beginning writers have trouble keeping up with the memory demands on them as they compose text. She believed that novice writers could devote more of the resources of the working memory to the process of decision-making if they were taught to internalize some of the basic writing strategies that more experienced writers use (see Graham & Perin, 2007). Expert writers use their working memory to plan their essays and product goals. Novice writers do not have the same processing skills as expert writers therefore, writing demands can overload their working memory. The writing demands exceed novice writers' storage capacity and can make retaining information more difficult. Competing demands on working memory resources can be reduced as processing skill develops and processes become more automatic (McCutchen, 1996). Kellogg (1990) argued that "all three components of writing – planning, translating, and reviewing – exert considerable processing demands" (as cited in McCutchen, 1996, p. 305). Kellogg (1990) found that all three writing processes required a similar effort in terms of using working memory.

McCutchen (1996) observed that expert writers have the ability to hold the text's overall chronology in their working memory, while novice writers lack this ability leading to difficulty correcting meaning errors. In addition, McCutchen theorized that expert writers had larger memory spans and used more global revision strategies than novice writers. She commented that "working memory capacity may profoundly affect the very nature of the processes writers employ. Specifically . . . revision processes employed by low-skill writers were qualitatively different from those of high-skill writers" (p. 318). It appears that the capacity limitations of writers can affect not only the number of writing processes that the writer can manage, but also the nature of the writing processes.

When discussing working memory as it relates to writing skill, McCutchen (1996) suggested that it was important to remember that every student has a different working memory capacity which contributes to developmental differences in writing skill. Flower and Hayes (1980) detailed the complexity of the writing processes but did not address questions about the ways in which individual writers managed the demands of writing. McCutchen (1996) identified "that it is within working memory that information (from the environment and from long-term memory) is stored during processing" (p. 300). She stated that due to overall resource limitations within the system, trade-offs exist between working memory's storage and processing functions.

Developing Working Memory. Writing is made up of a set of hierarchical goals (Flower & Hayes, 1981; Sanders, Janssen, van der Pool, Schilperoord, & van Wijk, 1996) that range from the lower level syntactical features to higher order cognitive analysis. Novice writers tend to focus on the lower level features of text production (knowledge telling) to the exclusion of higher-order functions such as ordering of information from the most important to the less

important (Flower & Hayes, 1981; Sanders et al., 1996). Since novice writers tend to use their working-memory for lower level functions, they have limited capacity for metacognitive processes (Jeffery & Underwood, 1996). By automatizing some of those lower level functions, writers can free working memory resources to attend to higher order questions.

Sitko (1998) found that novice writers tend to be more successful when they are taught to manage their working memories. Kellogg (2008), in discussing the implications of memory load for writing, stressed three points that can aid novice writers in developing their working memory. For Kellogg, the required degree of cognitive control in working memory relies on the following:

- Maturation of the executive component of working memory (i.e., Because there is a limited capacity for short-term memory, information must be moved to long-term memory. The executive attention must not only be given to language-generation, but also be available for planning ideas, reviewing ideas, and coordinating all three processes);
- Reducing the load on working memory by providing rapid, effortless access to domain-specific knowledge in long-term memory (automaticity); and,
- Reducing the working memory cost of planning, sentence generation, and reviewing processes so that executive attention can be devoted to managing their deployment. (p. 14-15)

In order for writers to keep multiple representations of the text in their working memory, they must find a way to reduce the demands made on their short-term memory. For first-year students, this entails “learning domain-specific knowledge that can be rapidly retrieved from long-term memory rather than held in short-term working memory and by automating to some degree the basic writing processes” (Kellogg, 2008, p.3). Kellogg (2008) believed that this can best be achieved by using a training method of cognitive apprenticeship (Vygotsky, 1978) with

an emphasis on deliberate practice.

Writing and Transference

Perkins and Salomon (1988) identify teaching for transfer as “what education hopes to achieve” (p. 22). The authors argue that one of the fundamental purposes of education is to teach the ability to transfer knowledge and skills learned in one context to other situations. They state that “transfer goes beyond ordinary learning in that the skill or knowledge in question has to travel to a new context [if it is to be successful]” (p. 22). For example, when students are taught to read using a particular book, they are taught with the expectation that they will also be able to transfer their knowledge of reading to other books. This requires that students learn to identify the common features of the intellectual exercise. One of the difficulties that students face in the generalization of writing skills seems to be the absence of teaching for transfer. It is more difficult to transfer writing skills if students are not made aware of the strategies by which they can transfer the writing skills they learn in one discourse to another. As McCarthy (1989) discovered in her case study of a first-year student, students are not always able to see the similarities between writing assignments in different courses despite the apparent similarity of those assignments.

When discussing the transfer of skills in an educational setting, Perkins and Salomon (1988) suggested that “the implicit assumption in educational practice has been that transfer takes care of itself” (p. 25). They acknowledged that this may be true with basic reading, writing, and arithmetic skills but argued that more complicated skills are less likely to transfer without some instruction in how to make that transfer work. Perkins and Salomon note that two features of learning characterize situations in which transfer can be expected to occur: (a) the skills and/or knowledge are learned to a level of mastery during the initial instruction period; and, (b)

instruction includes an explicit discussion of how and when to use the skills and knowledge.

However, Perkins and Salomon (1988) also suggested that the problem with transfer may be that there is less to transfer than educators had thought. The authors argued that many of the skills and knowledge students acquire may be too specific to context for transference (i.e., that some of the skills that are learned are local rather than general). The authors developed two models of transfer that they called *low road transfer* and *high road transfer*. In low road transfer, skills are automatic and well-practiced. There are enough similarities between the original learning context and the new context that transfer can occur (e.g., automobiles are similar enough that one can generalize driving skills from one car to another). By contrast, high road transfer “depends on deliberate mindful abstraction of skill or knowledge from one context for application to another” (p. 25). In these instances, students must take things they have learned and abstract them to new situations. That is, in unfamiliar problem situations, students must search their memories for analogues using previous strategies to solve new problems. Perkins and Salomon reported that high road transfer “always involves reflective thought in abstracting from one context and seeking connections with others” (p. 26).

In order to be effective, teaching for transfer should involve explicit instruction in the more general principles behind particular skills or knowledge. Students then attempt to generalize the learning themselves to effect greater automaticity (Perkins & Salomon, 1988). If, as the literature seems to suggest, students do not always recognize analogous situations and thus fail to see the points at which skills and knowledge might be transferred from one writing assignment to another, then perhaps first-year instructors should choose to focus instead on the teaching of organizational strategies that are not domain specific. The success of writing across the curriculum programs may, in fact, depend upon such non-specific strategizing.

Teaching writing heuristics to first-year students may provide the tools necessary to enable students to think about their reasoning patterns, to find the information they need, and to develop problem-solving techniques. As Wardle (2004) discovered, most writing in specific discourse communities tends to be “static and formulaic.” Therefore, rather than attempting to master discipline-specific writing protocols, protocols that can be accessed in writing manuals, students may be better served by instruction that focuses on decision-making strategies that are common to the different disciplines. These heuristics would allow students to learn to write in the different genres by critically examining the issues suggested by each discipline (Wardle, 2004). This metacognitive awareness of the types of decisions to make during the writing process may transfer across curricula more effectively because of the commonality between the writing decisions in the learning situation and those in the new situation (Nelms & Dively, 2007).

Nelms and Dively (2007) characterize the transfer process as:

involving several cognitive operations: a recognition of overlapping similarity between the originating context and the target context; an acknowledgement of the potential of the learned knowledge to be applied to the target situation; a mental, metacognitive testing of applicability . . . and the actual application attempt itself. (p. 216)

In her study of college writing, McCarthy (1989) defined Writing across the Curriculum “as a process of assessing and adapting to the requirements in unfamiliar academic settings” (p. 234). Focusing on the individual characteristics of writing processes in different classrooms, McCarthy sought to discover how students, over the course of a semester, learned to decipher the writing requirements for each discipline and each instructor and, ultimately, how they learned to produce writing in accordance with those requirements. McCarthy catalogued the writing experiences of one student in one class per semester during his freshman and sophomore years.

Follow-up data were collected in the student's junior year. McCarthy employed four research methods: observations, interviews, composing-aloud protocols, and text analysis.

McCarthy (1989) found that the student believed that each instructor in each class wanted something different in terms of text. She concluded that this student perceived himself to be a stranger in a strange land having to adapt to different languages and different writing cultures. McCarthy stated, "writers, like speakers, must use the communication means considered appropriate by members of particular speech or discourse communities" (p. 234-235). She observed that "as students go from one class to another, they must define and master the rules of use for written discourse in one classroom speech community after another. And their writing can only be evaluated in terms of that particular community's standards" (p. 235). Apparently, then, the writing processes employed by individual writers has to be understood in terms of the contexts that are created by the participants in the various discourses. Herrington (1985) reported that universities must be thought of as separate speech communities where each discipline has their own subject matter structure, social structure, and intellectual and social conventions of professionalism. There is some evidence, however, to suggest that some students may use consistent writing strategies across the different discourse communities that they find themselves in. These students have the ability to interpret assignments, reason, and organize their knowledge (Dyson, 1984). These students may be practicing teachable transfer skills.

Strategies for Addressing the Challenges that Students Face

In Acquiring Writing Competence

The third section of this review will explore a number of strategies for addressing the challenges students may experience in acquiring writing competence. The development of

metacognitive awareness of writing decisions has been shown to be effective (Flavell, 1976). Similarly, the use of models, both visual and textual, has proved useful for many students. The use of writing strategies, according to Graham and Perin (2007), is a very effective tool for many novice writers. Finally, the concluding discussion of heuristics will explore the degree to which instruction in heuristics may benefit students in their growth as writers.

Metacognition

Metacognition, or the ability to monitor the quality of one's own thoughts and the products of one's efforts, is one method by which students can be taught to contextualize writing decisions within the frame of the essay's overarching purpose. Metacognition refers to "the control processes which active learners engage in as they perform various cognitive activities" (Raphael et al., 1989, p. 346). Metacognitive training teaches students to become purposeful and deliberate in their decision-making (Flavell, 1976) and to measure the effect of decisions against an identified purpose. Because working memory does not permit a writer to attend to all required processes and decisions simultaneously, the writer must develop a facility for managing decision-making. That is, within the hierarchical structure of embedded decisions that comprise the writing process, the writer must find a protocol for determining which decision has priority at any given point. Flower and Hayes (1981) theorized that there were a "relatively small number of cognitive processes that were able to account for a diverse set of mental operations during composing" (p.188). Metacognitive instruction, which teaches students the way in which cognitive processes can be monitored, provides the means by which students can be taught to prioritize the series of decisions, addressing each in its order of importance at any stage of the composing process.

Metacognition and Writing

The ability to monitor, and make decisions about, writing processes allows writers to work intentionally and efficiently. In his meta-analysis, Hillocks (1986) found that writers are able to compose more effectively when they are taught to understand what they are writing, why they are writing, and to whom they are writing for (i.e., the audience). In the planning and generating stages, writers must assign a purpose to the assignment, access prior knowledge, and conduct research to discover new information. In the absence of knowledge of the purpose and intention of a writing exercise, it is extremely difficult for writers to contextualize, visualize, or organize the work.

Training in metacognition allows novice writers to begin to understand the effects that thinking about writing has on the writing process. The ability to monitor the quality and effect of one's own thoughts allows the writer to work more intentionally, managing "the control processes which active learners engage in as they perform various cognitive activities" (Raphael et al., 1989, p. 346) and using a series of checks and counterchecks to constantly monitor their understanding (Flavell, 1976). This "metacognitive knowledge consists primarily of knowledge or beliefs about what factors or variables act and interact in what ways to affect the course and outcome of cognitive enterprises" (Flavell, 1976, p. 232). Hacker (1998) separated metacognitive thinking into three types: "metacognitive knowledge (what one knows about knowing), metacognitive skill (what one is currently doing), and metacognitive experience (one's current cognitive or affective state)" (p. 3) and suggested that a mastery of metacognition facilitates the process of problem-solving. According to Hacker, the use of metacognitive thinking allows writers to plan, organize, draft, revise and edit, and to consider audience, purpose, and genre during the writing process.

In her study into the effect of working memory on the writing process, McCutchen (1996) found that inexperienced writers have difficulty managing the memory demands of the three main processing demands of planning, translating, and reviewing (see Flower & Hayes, 1981) needed to compose text. As well, McCutchen (1996) remarked that working memory capacity may affect not only the processes of writing but may also affect the nature of the processes that writers make use of. Inexperienced writers can become more adept at monitoring their thinking processes when provided with good instructional environments. With the help of instructors who provide the needed external support for the many writing processes, inexperienced writers can internalize the processes that are used by more experienced writers.

This external support is a critical component of writing instruction. Novice writers need to learn to manage the intricate structure of decisions that writing demands. MacArthur, Graham, and Fitzgerald, (2006) stated that “the purpose of such instruction is to change how writers’ compose by helping them employ more sophisticated composing processes when writing” (p. 188). Because working memory does not permit a writer to attend to all required processes and decisions simultaneously, the writer must develop a facility for managing decision-making. That is, within the hierarchical structure of embedded decisions that comprise the writing process, the writer must find a protocol for determining which decision has priority at any given point. Flower and Hayes (1981), in the development of their writing model, took into account strategies that facilitated the development of metacognition believing that metacognitive strategies provided a way to account for individual differences in how writers compose. Flower and Hayes further theorized that there were a “relatively small number of cognitive processes that were able to account for a diverse set of mental operations during composing” (p.188) and that the difference in the way in which novice and experienced writers manage these processes

contributes to the difference in the quality of their respective texts.

Models and Modelling

The High School Five Paragraph Model

For most university students, primary instruction in essay-writing occurs in junior high and high school, and that instruction tends to be formulaic (Dean, 2000; Wesley, 2000; Wiley, 2000). According to Applebee and Langer (1987), most writing instruction in secondary schools is “prescriptive and product centered, emphasizing the formal structure of effective discourse” (p. 6). Applebee and Langer found that this kind of instruction leads to an emphasis on the surface correction of grammatical errors and an emphasis on the traditional modes of discourse at the text level. The teaching model that has dominated high school writing instruction for decades is that of the five-paragraph essay (Applebee, 1984), which Applebee (1984) characterized as an “organizational model into which she [the writer] must slot whatever information is required for the task” (p. 105). Applebee suggested that structured models, like the five-paragraph essay, instruct students in the shape of the product providing them with a sense of what they are meant to produce. This kind of instruction does not, however, provide explicit instruction in procedure and rarely leads to the students’ understanding of the purpose of writing. According to Applebee, students found the absence of procedural instruction to be frustrating complaining that they received little feedback instruction until after they had handed in their essays. Applebee also noted that the comments students received on marked papers was often specific to the paper that had been handed in and did not offer guidance in the ways in which students could improve their writing in subsequent essays.

The use of the five-paragraph essay model is not without its proponents. Dean (2000), who confirmed Applebee’s (1984) finding of the model’s prevalence in high school classrooms

around the United States, offered a number of explanations for its popularity. She found that teachers liked the five-paragraph model because it was predictable, easy to teach, and easy to grade. Students liked the model both because it was safe and because it seemed to require little in the way of critical judgment. In addition, because standardized writing assessments tend to favour the use of the five-paragraph essay, students had a vested interest in the mastery of the model.

Regardless of the perceived merits of the five-paragraph model, however, it seems to result in important gaps in student understanding of the writing process. Wiley (2000) found that even though students can learn the five-paragraph formula for “arranging sentences in paragraphs . . . they are pretty much left to their own devices when it comes to identifying and utilizing strategies for inventing content” (p. 64). He further observed that “formulaic writing . . . forces premature closure on complicated interpretative issues and stifles ongoing exploration” (p. 64). Wiley attributed students’ inability to explore ideas and to question their own assumptions and beliefs to the use of a formula that appears to limit their expression to five paragraphs.

Visual models

The use of visual models to affect an understanding of complex relationships has a number of proponents. Trumbo (2000) theorized that the principles associated with science could be visually represented to make understanding easier. She used the example of chaos which is a complex principle in physics that appears to be more comprehensible when visually represented. These concepts of visual communication can be adapted to communication in general. Trumbo found that “through the process of observing, a static image is transformed into a cognitive, intellectual experience . . . the process of observing, perceiving, and understanding are intricately

connected” (p. 385). Gordon (1996) makes a case for the importance of providing templates that can be used as scaffolds to support learners as they move to new content domains. She theorized that “the templates provide a cognitive support for problem-solving by establishing a framework for student presentation which will concentrate thought, facilitate investigation and the development of critical and creative thinking” (p. 4). Further, these templates challenge students to become active participants in the learning process. Templates have the potential to assist students in reorganizing their thoughts so that they make sense of not only what they see but also what they hear. Gordon argued that, by providing templates, instructors are “assisting students through a modelled form of outlining” (p. 5). However, Gordon also suggested that, in order for the templates to be effective, students need to be encouraged to develop their own understandings and interpretations of the template. The model is not meant to be a formulaic method of learning but rather to serve as a platform from which students exercise higher-order thinking skills which “(a) causes focusing on important points; (b) helps students gain familiarity with text structure; (c) aids retention; (d) generates useful alternative texts to supplement materials read; and, (e) causes active participation in learning” (Biancol & McCormick, 1989, as cited in Gordon, 1996, p. 5). Among its other virtues, Gordon (1996) asserted that the modeling process is not faculty, learning style, or writing genre dependent.

Stolarek (1994) reported that “modelling of exemplary samples of prose has been a commonly used method of teaching composition skills, but little research has been done on the effectiveness of using prose modelling in the composition classroom” (p. 154). Stolarek undertook a study of 143 freshmen and twenty-one university composition instructors. The student group was limited to those who had completed the introductory college composition course, but no other college composition course. Participants were given different directions for

producing an unfamiliar prose form: the “modified chosisme.” A chosisme is a writing style in which plot and characterization are de-emphasized, and people, events, and setting are recorded as though they are seen by the author through the lens of a camera. Each participant was asked to write a modified chosisme. The essays were marked by two English department graduate students who were asked to score each essay for adherence and understanding of the characteristics of the modified chosisme form, using a four-point system.

Stolarek (1994) noted that the “benefits of modeling have often been described as being unconscious, as occurring without any conscious effort” (p. 187). She found that, for both students and faculty, modeling was not an unconscious activity. She discovered that those who consciously modeled the prose model achieved a higher adherence to the form. This led her to conclude that “modeling formal characteristics conscious imitation of the form being modelled leads to success in achieving that form” (p. 168). She pointed out that:

prose modelling may facilitate levels of metacognition in experts while encouraging in novices levels of metacognitive thought which more closely resemble expert response levels than novice response levels. Prose modelling may have caused novices to write more like experts than like other novices. (p. 169)

Stolarek concluded that modelling appears to be an effective method of teaching. She suggested that instruction in modelling works best when it is characterized by “a clear conception on the part of the instructor of what, exactly, is to be modelled, along with the presentation of a model which clearly exemplifies the characteristics which are to be modelled” (p. 170). She also cautioned, however, that “too often pedagogical applications of prose modelling are formulaic and doctrinaire rather than creative and generative” (p. 170).

Teaching Writing Strategies

In their meta-analysis *Writing Next*, Graham and Perin (2007) identified eleven elements that they determined would provide guidance for improving writing instruction for adolescents (grades 4-12). They reported that instruction in writing strategies like strategies for planning, revising, and editing had a substantial effect size ($d = 0.82$) on the quality of students' writing. This relatively large effect size indicates that, when students were given direct strategy instruction, they outperformed the control groups by more than 29 percentile points (that is, the control group performed at the 50th percentile while the strategy instruction group performed at the 79th percentile). They identified strategy instruction as the process of teaching strategies for specific types of writing tasks, specifically noting the efficacy of providing explicit and systematic teaching of the steps necessary for planning, revising, and/or editing text. They suggested that the ultimate goal of such instruction was to teach students to use strategies independently. They noted that strategy instruction had been shown to be especially effective for adolescents who had difficulties with the writing process.

The term *strategies* began to be used synonymously with the term *heuristics* in the 1970's. Heuristics were identified as strategies that could assist students in making writing decisions based on a problem-solving model that could be internalized to the point of automaticity. Expert writers, to some degree, were seen as those who had already integrated writing strategies to the extent that they operated independently. In writing instruction, it was the role of the teacher to provide scaffolds that would allow novice writers to acquire the strategies they would need to be able to make the decisions necessary to facilitate their writing process. The use of strategy instruction to teach new concepts and skills in composition has been supported in the research (Graham & Perin, 2007). In fact, some researchers suggest that it is

often the use of strategic approaches that distinguishes novice writers from experienced writers (Flower & Hayes, 1981). In its simplest form, strategy instruction provides novice students with the same techniques that experienced students use when learning new material or skills. As Polya (1957) discovered, students do not learn concepts effectively through the process of memorization but rather by learning to use a specific pattern of problem-solving: identify, plan, monitor, and check. This strategy is discussed in greater detail starting on page 100. The underlying principle informing instruction in writing strategies is that instructors can help novice writers improve by teaching them to employ the same writing strategies that experienced writers use when they compose text.

In an effort to develop an intervention that would assist children who struggle with the process of writing, Harris & Graham (1996) implemented a research-based approach called Self-Regulated Strategy Development (SRSD). The SRSD is an instructional approach designed to improve a writer's strategic behavior, knowledge, and motivation (Asaro-Saddler & Saddler, 2010). Asaro-Saddler and Saddler (2010) reported that the SRSD approach has four self-regulatory procedures which are: goal setting, self-monitoring, self-instruction, and self-reinforcement. Throughout the process of writing, students are encouraged to ask themselves questions to consolidate their understanding of the writing strategies they are employing. SRSD uses the following six stages of instruction: (1) development of background knowledge; (2) discussion of the strategy; (3) modeling/self-instruction of the strategy; (4) memorization of the strategy; (5) supportive collaboration practice of the strategy; and, (6) independent demonstration of utilizing the strategy to obtain effective results (Gracia & Hidalgo, 2006).

The SRSD approach is an interactive approach in which students are actively engaged in all of the individual stages of the writing process. Students are able to move through the stages

at a pace that is dictated by their respective level of understanding. The approach includes an element of repetition, allowing students to practice the strategies as they write. In working through the stages, students are encouraged to self-monitor their process, evaluating their decisions to ensure that the decisions are leading to the successful completion of goals. One of the benefits of the model is that it is flexible enough to teach a variety of writing strategies in a systematic, explicit, and consistent manner.

The **STOP AND DARE** model was developed to help students learn to write persuasive essays using SRSD techniques (De La Paz & Graham, 1997). De La Paz and Graham (1997) suggested that the SRSD techniques are effective in the teaching of writing strategies because students learn specific steps to accomplish writing tasks, and teachers are able to scaffold their learning. In the STOP and DARE model, students move beyond the formulaic relationship of premise, supporting reasons, and conclusion. Students are taught to self-regulate using writing strategies such as goal setting, self-instruction, and self-monitoring. The mnemonic STOP is designed to help students to remember the strategy's steps: (1) **S**uspend judgment; (2) **T**ake a side; (3) **O**rganize ideas; and, (4) **P**lan more as you write (De La Paz, 2001). In the DARE stage of the strategy, students are reminded to: (1) **D**evelop [the] topic sentence; (2) **A**dd supporting ideas; (3) **R**eject arguments for the other side, and **E**nd with a conclusion (De La Paz, 2001). In reflecting on their own study, De La Paz and Graham (1997) offered an important observation. The students who were taught to use the **STOP AND DARE** approach in one-to-one sessions required only four to seven individual sessions to acquire the technique. By contrast, when students were working in small groups, they needed ten sessions to achieve the same level of competence with the strategy.

Another multi-stage writing strategy that has proven successful is **POWER**. **POWER**

stands for (1) **P**lan (the stage at which students are encouraged to choose a topic and gather information); (2) **O**rganize (the stage at which students are asked to revise their notes and develop an outline using a text structure sheet); (3) **W**rite (the stage at which students use their notes and outlines to write the first draft of the essay); (4) **E**dit (the stage which students check spelling, capitalization, punctuation, word order, and grammar individually or with peers); and (5) **R**evisе (the final stage during which students make changes to their respective essays based on the suggestions received (Englert, Raphael, Anderson, Anthony, & Stevens, 1991). This model was predicated on the assumption that students require instruction not only in the processes of writing but also in the structures that frame well-formed texts. Englert, Raphael, Anderson, Anthony and Stevens (1991) suggested that one of the goals of writing instruction should be the transfer of control of the writing process from instructors to students. In order to achieve that goal, instructors need to foreground both the processes of writing and the strategies for managing those processes. Implicit in these suggestions is the notion that effective writing instruction must address the need for students to develop metacognitive awareness and the ability to self-regulate. To that end, Englert et al., (1991) stress the importance of using modeling techniques to illustrate the normally invisible cognitive processes related to planning, drafting, and revising text. This modeling allows students to observe the procedures that experienced writers follow when they compose text. The POWER model appears to be effective in guiding students through the execution of writing strategies even in those situations in which the students do not completely understand the way in which specific procedural steps fit within a cognitive framework (Englert et al., 1991). This allows instructors to scaffold novice writers to an understanding of the writing strategies that are used by more experienced writers. In their study of fourth and fifth grade students, Englert et al. (1991) found that students' overall writing

quality improved when they followed a model that made the underlying essay structure visible to them. In addition, they found that students benefited from the use of “think sheets” which facilitated the dialogue between both students and teachers and students and peers. The “think sheets” also facilitated a kind of self-monitoring, during which students reflected on the applicability of specific strategies. Strategy instruction using the POWER model appeared to assist novice writers in a number of ways: in learning writing strategies, in organizing their essay according to a visible text structure, in their awareness of audience and purpose, in their understanding of the writing process, and in their ability to transfer the strategies to less structured writing situations (Englert et al., 1991). Students who used the POWER model did not appear to be simply working by rote in applying the text structures to produce better organized texts (Englert et al., 1991). Rather, they seemed to have developed greater awareness of both the writing process and their own role in shaping their respective essay.

In his analysis of effective writing strategy instruction, Carter (1990) used the terms strategies and heuristics interchangeably. He stressed that “successful [writing] performance is a result of the application of powerful heuristic strategies” (p. 268). Carter found that expert writers are more likely than novice writers to turn to general learning strategies when they experience difficulties in the writing process. Carter observed that more competent writers have a large repertoire of general writing strategies that provide them with more choices when they encounter difficulties. They have strategies for “discourse analysis, revision, generating ideas, getting started, overcoming writer’s block, [and for] determining and writing for an audience” (p. 282). He theorized that these strategies allow the writer to achieve some success in writing even when they do not have extensive experience in the particular discipline. He reported that “when students are taught such strategies in a way that emphasizes both their contextual use and their

control through self-monitoring procedures; the students exhibit a dramatic improvement in their performance within a particular context” (p. 270). He described the writing process as a continuum in which writers move from general knowledge to local knowledge. In the different disciplines found at universities/colleges, novice writers learn to apply general strategies in specific situations, developing strategies that are more content-specific. That is, as students become familiar with the discipline in which they are writing, they move from a reliance on general strategies to an increased understanding of the decision-making procedures that will lead to improvement in specific writing situations.

Flower and Hayes (1977) identified writing as a cognitive process and stressed the importance of teaching students heuristic procedures that would help them think through their problems. They identified heuristics as alternatives to reliance on trial and error decision-making. Flower and Hayes further distinguished heuristics, suggesting that heuristics were not definitive rules but alternative methods for problem-solving that effective thinkers use unconsciously. They reported that some students have very limited problem-solving techniques that hinder them when composing. In Flower and Hayes’ view, students have to see writing as a communication problem that they are attempting to solve, using all of the strategies that they have available. As Carter (1990) did, Flower and Hayes (1977) use the terms heuristics and strategies interchangeably. They hypothesize that the teaching of heuristics provides writers with more choices when they run into difficulties during the composing process. They stressed the importance of teaching heuristics that assisted students in the process of planning toward a goal, translating ideas into words, and constructing a draft for an audience. They concluded that, in order to make a new heuristic an effective option for students, the students have to be presented with the heuristic in a classroom setting and then given the opportunity to practice

using and applying the heuristic.

Similarly, Rosenshine and Meister (1992) found that students performed higher-level operations when they were taught cognitive strategies. They were careful to point out, however, that the strategy instruction was not a direct procedure but rather emerged through general instruction as heuristics that supported the learner as they performed the higher-level operations. That is, the heuristics function as supports or suggestions in the writing process. In the writing process, these operations assist students in the organization of their writing assignments and enable them to recognize prompts that facilitate decision-making. Rosenshine and Meister reported that students benefitted from instruction that broke the writing process into a number of smaller steps (i.e., first teaching one step, providing guided practice, and then allowing the students to practice before teaching the next step).

In his discussion of the cognitive process model of writing (see Flower & Hayes, 1981), Berlin (1988) suggested that the model identifies the setting of goals as the most important component of the writing process. It was, however, his contention that Flower and Hayes (1981) did not address the ways in which writers set goals or the way they determine whether the goals are worth pursuing. He noted that, although Flower and Hayes (1981) referred to *problems* in reaching the goals and spoke of the strategies (heuristics) needed to resolve those problems; they did not provide a satisfactory case for the use of heuristics. Berlin (1988) argued that heuristics, as they were defined by Flower and Hayes (1981), were not rational, not linear or predictable, and did “not come with a guarantee [of success]” (p. 482). The heuristics were represented as unconscious, intuitive processes that problem solvers use without thinking about them. As a result, the heuristics could only be as good as the person using them.

Heuristics

The writing process, with its series of checks and counterchecks (Flavell, 1976), is a complex thinking activity. This is especially true for novice, or inexperienced, writers who often do not have the tools or strategies necessary to be able to plan, translate, and review their writing (Flower & Hayes, 1981). Hashimoto (1985) noted that in order to help students “invent, or pre-write, or limit a subject, many composition specialists advocate teaching students to use structured heuristic procedures” (p. 73). Hashimoto defines heuristics as “conscious deliberate search strategies” (p. 73) such as those advocated by Burke’s Pentad (1969), or Young, Becker and Pike’s (1970) tagmemic questions. In addition, Flower (1981) suggested that heuristic procedures are only *high probability* ways to proceed, for “complex problems like writing, heuristics are the most dependable and most creative way to go” (p. 45). Similarly, Young (1976) emphasized that using heuristics “makes data gathering more efficient and increases the likelihood that the account will be adequate” (p. 2).

As Flower (1981) observed, however, writing instructors need to be aware that heuristic strategies are not infallible, and that instruction must be undertaken with great care to avoid leading students to simplistic or reductive views of the writing process. Students, especially novices, should be aware that the structured heuristic procedures are dependent on the differences in cognitive style (Kogan, 1971). Kogan (1971) defined cognitive style as “individual differences in modes of perceiving, remembering, and thinking, or as distinctive ways of apprehending, storing, transforming, and utilizing information” (p. 244). These characteristics can “seriously affect both the ways students chose to discover information and the kinds of information they recognize as important” (Hashimoto, 1985, p. 74).

Hashimoto (1985) stressed the importance that experience has on the writer’s ability to

use heuristic procedures. He also suggested, however, that “students apply their heuristic procedures to their experience to transform their experience, and construct ideas from their experience. Yet no matter what heuristics procedures students use, their own prior experience can limit the effectiveness of those procedures” (p. 74). Hashimoto argued that a writer’s prior experiences can limit their discovery of new information or ideas. He discovered that the people who recognize the importance of experience in shaping perceptions also “emphasize the difficulties people have in shifting perspectives, changing their conceptual structures and recognizing other ways to see issues and problems than the ones they are most accustomed to” (p. 75).

Flower and Hayes (1981) observed that novice and experienced writers differ in the way in which they manage the hierarchy of embedded decision-making that is required for composition. Where experienced writers made localized decisions on the basis of the way that those decisions could contribute to the larger thematic structure, novice writers tended to list information and failed to connect that information to the larger theme. Similarly, in his meta-analysis of writing research, Hillocks (1986) discovered that novice writers needed to be taught to think about what they were writing, why they were writing, and to whom they were writing. They needed to assign a purpose to the writing exercise and use that purpose to guide their writing decisions. Writing instruction, then, must provide novice writers with a strategy for making purposeful decisions.

Polya (1957) maintained that problem-solving skills could be taught to students in all disciplines using an integrated model of individual steps. Though he began by using the model as a means of teaching mathematics, he found that the model was not content specific. He identified four basic principles as being necessary to teach students how to solve problems:

- Understand the problem. Polya taught teachers to ask students questions to help them understand what the problem was they were being asked to solve. (e.g., what are you asked to find or show? Can you restate the problem in your own words?);
- Devise a plan. Polya suggested that there is a skill in choosing the appropriate strategy to use, and this is best learned by solving many problems (practice);
- Carry out the plan. Students needed to be encouraged to be persistent with the plan they have chosen. If the plan was not working, however, students needed to be taught to recognize the plan's defect and discard it; and,
- Look back. Polya argued that much could be gained from having students look back at what they had done, and reflecting on what had, and had not, worked. By carrying out this step, he believed that students would learn what strategy they could use to solve future problems.

Todd and Gigerenzer (2007), on the other hand, were interested in investigations of decision-making in its own right. According to Todd and Gigerenzer, “the modern study of decision-making began with the normative ideal that good decisions follow the mathematical prescriptions of Bayes’s rule or the maximization of expected utility” (p.168). This view held that utility guided the active process of human decision-making. Todd and Gigerenzer argued otherwise, saying instead that, “humans rely on multiple simple decision heuristics, not the one general purpose calculus of rationality” (p. 168). They held that, in many situations, it was more rational to use “a single reason to make decisions . . . restricting information as much as possible” (p. 168-169). In contrast to Kahneman, Slovic, and Taversky (1982), who believed that the use of heuristics for decision-making was, at best, the least undesirable of the options

available in information poor environments and who worried that individuals could “be led to use particular heuristics in inappropriate environments and consequently make errors” (p. 168), Todd and Gigerenzer (2007) argued that the use of heuristics was both efficient and effective. Heuristics, they hypothesized, was an adaptation to the environment and that:

brains on this planet have likely evolved longest to deal with patterns in the physical environment . . . [and that] many of these patterns can be characterized in terms of cue validities (how often a cue indicates a correct decision), discrimination rates (how often a cue distinguishes between decision alternatives, regardless of its corrections), and redundancies (correlations between cue values across alternatives. (p. 170)

Depending on the circumstances and the environment, single cue heuristics allow humans to make good decisions using the information that is available in the environment.

Gigerenzer (2004) defined a heuristic as a decision-making rule that embodies three qualities: (a) heuristics can be easily understood and taught to novices and can also be generalized to new situations; (b) heuristics exploit structures of environments and thus are specific to the environment in which they exist; and, (c) heuristics are distinct from “as-if” optimization models. With a good model of a heuristic, according to Gigerenzer, one can make predictions that could not be obtained from an as-if optimization model (which are silent about process). Gigerenzer stated that “a model of a heuristic is a rule whose purpose is to describe the actual process – not merely the outcome – of problem solving” (p. 64). Further, he suggested that: “a model of a heuristic specifies: (a) a process rule; (b) the capacities that the rule exploits to be simple; and (c) the kinds of problems that heuristics can solve, that is, the structures of environments in which it is successful” (p. 67).

Young, Becker, and Pike (1970) developed the tagmemic heuristic procedure which

provided a series of questions or operations that could guide inquiry and increase the likelihood of discovering a workable solution to a rhetorical problem. According to Young et al. the heuristic was meant to serve three functions:

- It aids the investigator in retrieving relevant information that he (sic) has stored in his mind. (When we have a problem, we generally know more that is relevant to it than we think we do, but we often have difficulty in retrieving the relevant information and bringing it to bear on the problem);
- It draws attention to important information that the investigator does not possess but can acquire by direct observation, reading, experimentation, and so on; and,
- It prepares the investigator's mind for the intuition of an ordering principle or hypothesis.

(p. 120)

In their text *Rhetoric: Discovery and Change*, Young et al. defined the composition process in terms of four components: (a) preparation; (b) incubation; (c) illumination; and (d) verification. In the preparation stage, the writer identifies and explores the nature of the rhetorical problem, or felt dissonance, through a systematic heuristic inquiry, that Young et al. call the *tagmemic discovery process*. This nine-celled, multiperspectival grid provides the writer with particle, wave, and field views of the data that are organized according to their contrastive/identificational features, their range of variation, and their distribution in context. In the incubation stage the writer is meant to participate in a subconscious exploration during which analytical inquiry is set aside in favour of intuitive or creative interactions with the text. During the illumination stage, the writer postulates a solution to the rhetorical problem using both analytical and non-analytical means. It is at this stage that the writer is encouraged to make a *leap* toward an imaginative

insight. Finally, during the fourth stage, verification the writer tests the hypothesis of the illumination stage using the criteria of correspondence, consistency, and usefulness.

A number of researchers have investigated the effectiveness of Young et al.'s (1970) heuristics and related tagmemic principles in order to verify experimentally whether the teaching of the tagmemic heuristic does, in fact, improve students' writing performance. In particular, researchers have been interested in the degree to which the heuristic guides students during the invention stage of writing. While the evidence of such experimental research has not consistently verified the effectiveness of the tagmemic heuristic, it was, and continues to be, influential. In particular, tagmemic rhetoricians continue to argue that the tagmemic provides insights that are not restricted to literacy and pedagogy but also to human psychology and anthropology.

Hillocks (1982) acknowledged that heuristics are "useful in providing guidelines for the systematic analysis of data, [but argued that they] tend to subsume at each level a variety of skills and strategies which appear to be fundamental to their effective use" (p. 661). He used Young et al.'s (1970) tagmemic heuristic as an example of the way in which heuristics can become so complex that they fail to operate as a heuristic. According to Hillocks (1982), the tagmemic heuristic, which "requires that the user examine a given phenomenon from the perspective of particle, wave, and field and in terms of its contrastive features, variation, and distribution" (p. 661), is too complex. In order to use the tagmemic heuristic, the writer would have to be taught to use a complicated "three-by-three matrix" of complex strategies:

- one must first identify and name the unit and its features, a task which in itself is complex, especially for anyone dealing with new data or even familiar data seen from a new perspective;

- one must discover or generate similar units (through continued observation, from memory, or through imagination), generate criteria which discriminate the unit under consideration from those which are similar; and,
- finally test the criteria against further data to insure their adequacy. (p.661)

Hillocks found that “such complex tasks appear to require instruction focused on them rather than on the larger heuristic which subsumes them” (p. 661).

Lauer (1970) turned to a study of heuristics in order to address “the dead art of invention as a major cause of the writing problem” (p. 396). She was seeking a way of recovering “the lost art of invention – the art of discovering *what to say*, of making original judgments on experience, of discovering means of communicating this unique insight with a particular voice to a particular year of deciding between non-synonymous utterances” (p. 396). Lauer focused on the work of Polya (1957), a mathematician, who had been investigating the use of heuristics for problem-solving in geometry and other mathematics. Polya observed that the “aim of heuristics is to study the methods and rules of discovery and invention” (p. 113). Polya cautioned that “heuristic reasoning is reasoning not regarded as final and strict but as provisional and plausible only, whose aim is to discover the solution of the present problem” (p. 113). In the context of the cognitive process theory of writing, this form of reasoning allows writers to address the individual decisions in the hierarchical structure of decision-making (see Flower & Hayes, 1981), one at a time. Lauer (1970) reported that the study of heuristics was mainly being undertaken in the discipline of psychology where researchers had discovered “that creative people had developed an effective set of heuristic procedures” (p. 396).

Lauer also reported that some psychologists, notably Maltzman (1960), “are demonstrating the ‘trainability’ of heuristic procedures” (as cited in Lauer, p. 397). Lauer (1970)

believed that “the sources of a meta-theory of rhetoric cannot be found in rhetoric itself” (p. 397) but rather needs to be discovered in “psychologist’s work in creative problem-solving . . . grappling with unmanageable complexities of variables, battling with strict behaviourists” (p. 397).

Scardamalia, Bereiter, and Steinbach (1984) conducted research to determine whether novice writers could learn to become expert writers if they were taught to use more sophisticated writing strategies. They introduced students to the composing model (i.e., planning, translating, and revising) that Scardamalia and Bereiter (1987) had found that expert writers use in writing a paper. In particular, the researchers were interested in finding the degree to which novice writers engage in reflection. Scardamalia and Bereiter (1987) had found that reflection was an important step for expert writers. They hypothesized that students who reflected on their work, identifying what had worked and what had not, would be better able to solve problems in future writing assignments.

Scardamalia et al. (1984) studied grade six students in two intact classrooms from a middle- to high-income urban area. There were 30 students in the experimental class and 32 in the control class. The instruction for the experimental class consisted of two – 45 minute periods a week for 15 weeks. This was undertaken by two of the authors. The first ten weeks of instruction focused on the opinion essay, with the remaining period of time focusing on an expository essay. The instruction included three distinctive components:

- procedural facilitation, during which students were taught to make choices about the kind of thinking they needed to be doing;

- modelling thought, during which the instructor would model planning for the students or students would model planning for one another, sometimes with cue cards and sometimes without; and,
- direct strategy instruction, during which students were explicitly taught to pursue a particular strategy of high level thinking to reconcile inconsistencies. (p. 181)

Formal assessment of the groups was undertaken using pretest and posttest opinion essays and expository essays with six randomly selected students from each class being tape-recorded using think-aloud protocols.

Pretest and posttest essays were rated by two raters on a global scale ranging from knowledge-telling on one extreme to reflective reasoning on the other. Using a nine-point scale with nine being the most reflective, the experimental group had an average score of 5.43 compared to the control group average of 3.35. The difference was statistically significant beyond the 0.05 level. Some of the subjective observations of Scardamalia et al. (1984) indicated that the experimental group:

- enjoyed planning as an activity to a greater extent;
- demonstrated increased ability to monitor and analyze thinking;
- were better able to recognize problems at the planning level;
- better understood the function of planning cues;
- were more likely to use goals as criteria for selecting ideas;
- demonstrated more mature note-making;
- were more reflective in the use of information sources;
- demonstrated greater ability to sustain planning; and,

- demonstrated the beginnings of an understanding of the dialectical process. (p. 184-187)

Like both Flower and Hayes (1981) and Gigerenzer (2004), Scardamalia et al. (1984) believed that, by observing experts in the field (in their case, expert writers), they would find strategies that could be taught to novices. Over the course of their study, they observed that novice writers used what the authors called a “knowledge-telling” strategy in which students produce text by writing down their first idea immediately, then writing their next idea, and continuing until they run out of ideas at which point they stop (Collins, Holum, & Brown, 1991). By contrast, expert writers spend time planning what they are going to write, then write, and, finally, revise what they have written (Hayes & Flower, 1980). Scardamalia and Bereiter (1987) refer to this as “knowledge-transforming” a process which incorporates a linear generation of text which is then organized around a more complex structure of goal setting and problem-solving.

Hillocks (1986) reviewed a study by Young and Koen (1973) who had studied the effectiveness of the tagmemic heuristic. Young and Koen followed twelve students in a university rhetoric course. They reported that “by the end of the course students essays were rated higher and students were better able to state problems and examine them more thoroughly” (as cited in Hillocks, 1986, p. 179). More interestingly perhaps, Odell (1974) explored the usefulness of Pike’s ‘tagmemic discovery procedures’ in the writing of first-year English students as those students worked through five essays about different literary works. Odell discovered that the students who used the heuristic “did not perform *more* of the intellectual operations suggested by Pike’s theory, they did perform *most* of the intellectual operations significantly more times” (p. 179). The students also “showed a significant increase in the use of

evidence” (p. 179). Odell did express some concern as to whether the improvement occurred as a result of the use of the tagmemic heuristic or as a consequence of the instructor’s teaching methods.

Hillocks (1986) also reviewed the research of Lamberg (1974) who followed thirty-five students (20 of whom were 10th grade students and 15 who were 7th to 10th grade students). The effect of Lamberg’s intervention was rated using pretest and posttest narratives which were assessed by two raters using six pre-determined criteria. The study revealed that “nineteen or more of these students showed increases in completeness (number of questions completed to any degree and the completeness of those answers), development (number of words carrying specific information), and length (total number of words)” (p. 179). There was no improvement reported on the criteria of unity, point of view, and chronological order. Hillocks (1986) expressed some concern over the validity of this study citing “the character of the sample, the lack of controls for teacher and practice effect, and the lack of information on rater reliability” (p. 179).

Burns (1980) tested three different heuristics, including the tagmemic matrix, and reported “significant gains within all three groups of college freshman in ‘insightfulness, comprehensiveness, intellectual ability, and overall qualitative performance” (p. 21). Despite the general improvement amongst the students, there were no significant differences between the groups (i.e., the different heuristics proved to be equally effective).

Marble (1986) proposed a four phase “critical thinking heuristic for the whole argumentative composition” (p. 70): Phase I is extrinsic research and evaluation; Phase II determining claim (analysis and invention); Phase III organizing invention and analysis in standard argument form; and, Phase IV writing the argumentative composition. In Phase I, “teachers of critical thinking have found that a way to help students focus on weaknesses, vague

impressions, and underdeveloped evidence as well as the strengths of an argument is to analyze it in standard argument form” (p. 70). Phase I allows the student to begin “assessing the acceptability, relevance, and sufficiency of the premises within the given context” (p. 71). In Phase II, the student states the problem, and constructs an argument to resolve it. At this stage, the student could be taught to use either Young et al.’s (1970) tagmemic heuristic or Burke’s (1969) Pentad. Alternatively, other heuristics for invention and analysis could be used. The purpose of Phase II is to provide a rough form to the argument. In Phase III, students are taught to organize their invention and analysis in accordance with the standard argument form. As Marble (1986) observed, the standard argument form “is designed to ensure that the student does not overstate or understate his claims, to ensure that his claims are relevant and sufficient and to ensure that he is making a contribution to the dialectical examination of the issue” (p. 72).

Finally, in Phase IV, the student combines the summary of Phase II, and the standard argument form of Phase III to create the final form for the essay. According to Marble (1986), the decisions the student had made in the process of writing increase the likelihood that the student will have both the necessary information for the essay and a logical structure in which the various sub-thesis have been coherently connected to the main theme. Among its other advantages, Marble’s heuristic allows the student to adapt to the emerging text. As Marble found, if “the focus of the composition [changes] once writing actually begins . . . the writer should realize that his standard argument form is not to be rigidly adhered to” (p. 72).

Marble (1986) claimed that “students who have used the critical thinking heuristic have noted that their compositions are not the completion of the invention of an argumentative essay, but a step in the dialectic of an issue” (p. 74). That is, the critical thinking heuristic allowed students to engage in the process of exploring the relationship between the thesis and antithesis

of an argument before beginning to write. Marble found:

the critical thinking heuristic for the argumentative composition gives students a method of specifying and qualifying the point they want to make, of judging evidence as it relates to making that point, of developing lines of reasoning, and of looking both extrinsically and intrinsically for claims, background information, and alternate points of view. (p. 74)

In addition to providing a structure for essay writing, the critical thinking heuristic encourages “a writer to discover his unstated beliefs, assumptions, contradictions, and inconsistencies” (p. 74).

Instruction in the Use of Heuristics

Instruction in the use of heuristics has not yet been demonstrated to be effective. The most predominant example of the use of heuristics in composition studies continues to be the tagmemic heuristic of Young et al. (1970), or variations of that heuristic. Young et al. have been criticized on a number of grounds, including the argument that their heuristic prescribes form and “form ought not dictate content” (Hashimoto, 1985, p. 77), and the contention that the use of the heuristic requires a paradigmatic or conceptual shift on the part of the student, which does not occur without a considerable investment of time and effort. In his evaluation of the tagmemic heuristic, Hillocks (1982) suggested that the matrix of complex intellectual operations that constitute the tagmemic are problematic for a number of reasons: (a) the complexity of the tagmemic makes it difficult for researchers to determine whether an observed effect derives from the tagmemic as a whole, or from one of its constituent parts; (b) the complexity of the tagmemic increases, rather than decreases, the amount of time students require to improve writing performance; and, (c) in some cases, students find that writing with the tagmemic is more difficult than writing without it. (i.e., It makes the task more difficult, rather than less.). In fact, Hillocks suggested, the tagmemic of Young et al. (1970) may be too complex to qualify as a

heuristic at all.

Although there is evidence to suggest that the teaching of composition heuristics is effective (e.g., Scardamalia et al., 1984), it is not always clear whether the effect is due to the teaching or to the heuristic itself (Hillocks, 1986). Instruction in the use of the tagmemic heuristic, in particular, has not proven to be successful in all cases. For instance, Ebbert (1980) studied the relative effectiveness of the tagmemic heuristic with nine different classes of sixth graders. He compared the effectiveness of the tagmemic heuristic to that of a heuristic based on Burke's (1980) pentad (agent, action, instrumentality, recipient, and cause). Three classes were taught the tagmemic heuristic, three classes were taught the pentad heuristic, and three classes served as the control (i.e., the students followed the regular curriculum). Effect was measured using pretest and posttest compositions that were rated using criteria of audience analysis, organization, and detail. The analysis of the compositions showed that the control group scored significantly higher than the tagmemic group in organization and detail, the pentad group scored significantly higher in detail than the tagmemic group, and there was no significant difference between the tagmemic and pentad groups in terms of audience analysis and organization. This calls into question the value of teaching the tagmemic heuristic as an aid to composition.

In addition, despite the claims of enthusiasts like Vitanza (1979), who argued that the tagmemic heuristic has broad applicability across curriculum as a discovery tool, the tagmemic heuristic seems to be better suited to some domains than others. For example, the heuristic seems to deal more effectively with questions that might emerge in the analysis of literature and narrative than with the sort of questions that are characteristic of the social sciences. As such, its transferability across curriculum may be limited. Because it is informed with the epistemological assumptions of the humanities, even its function as a discovery strategy seems to

be, to some extent, discipline specific.

On the other hand, there appears to be a number of points at which the structure of the tagmemic of Young et al. (1970) converge with the structure of the problem-solving heuristics that have proved successful in other domains. The component units of the tagmemic (i.e., preparation, incubation, illumination, and verification) correspond with the individual steps of Polya's (1957) problem-solving model (i.e., understanding of the problem, devising of a plan, carrying out the plan, and reflection on the effect of the plan). The stages through which Young et al. (1970), on the one hand, and Polya (1957), on the other, advance in addressing problems correspond with Flower and Hayes's (1981) steps of pre-writing, translating, and reviewing. Each stresses the need for preparation of some kind (the preparation/understanding the problem/devising a plan). In addition, the end stage (verification/looking back/reviewing) in each system requires that individuals reflect upon the relative success of the plan. In their research, Scardamalia et al. (1984) found that students who had been taught to reflect on what strategies were successful in their writing were better able to transfer those skills across to future writing assignments. The similarities between these various models, however, may derive from their commonality as general problem-solving strategies rather than any commonality as heuristics.

As distinct from the complex tagmemic heuristic, Gigerenzer (2004) viewed successful heuristics as being simple and specific to their context. It is important, he said, that heuristics be easily understood and easily taught to novices and also that they be generalizable to new situations. He also said that heuristics exploit structures of environments and thus paradoxically are specific to the environment in which they exist even as they are generalizable to new situations. This understanding of the single cue heuristic, easily comprehensible and generally

flexible, makes it a useful mechanism for addressing the individual decisions that Flower and Hayes (1986) identified as the dynamic that drives composition. Paradoxically, though Gigerenzer (2004) identified heuristics as being specific to their environment, the very fact that they encourage writers to make their best guesses on the basis of information they derive from the environment (In the case of writers, the environment is the emerging text) means that the strategy is less likely to be domain-specific. One of the advantages of the cognitive process theory of writing is that it contextualizes composition as an interaction between the writer and the external environment. If the heuristic allows the thinker to reason analogously using the information available in the environment to predict a similar pattern in a new situation for which the reasoner has incomplete information, the heuristic may be, in fact, a reasonable strategy.

While Gigerenzer (2004) did not speak specifically about the use of heuristics in composition, many of his observations could be extrapolated to the writing process. For example, Gigerenzer talked about the effectiveness of single-cue heuristics to aid in decision-making. Flower (1981) found that structured heuristic searches are “the most dependable” (p. 45), and Flower and Hayes (1986) described the writing process as a series of embedded rhetorical problems, each of which requires a decision-making strategy. This process of reasoning by using “the single best available cue” (p. 169) may explain why effective writers, operating in the complex and ambiguous milieu of the writing environment, are able to make the kinds of decisions that are necessary to move the text forward. In many ways, the writing environment is one “with high variability, low predictability and little opportunity for learning, [where] good decisions may none the less be made more often by simple mechanisms than complex ones” (p. 169). However, as Flower and Hayes (1981) reported, “sometimes a single cue in an assignment . . . can let a writer tap a stored representation of a problem and bring a

whole raft of writing plans into play” (p. 365-366).

Although there is no consensus on the nature of essay writing in first-year university, the essay that seems to emerge most-often across curriculum is the argumentative essay (Davies, 2006; McCune, 2004; Quilligan, 2006). Marble (1986) stated that, “critical thinking is both theoretically and practically compatible with the new rhetoric, and because it offers a unique argumentative strategy, it can be used heuristically in developing cogent and compelling argumentative essays” (p. 70). As such, it may offer a means by which to integrate some of the general decision-making strategies of Gigerenzer (2004) into the writing of argumentative essays. The argumentative model that Marble (1986) proposed is an example of the way in which single cue heuristics can be woven into the writing process to guide the writer’s decision-making. Marble’s model provides a series of simple questions or reflections (with the notable exception of the uses of the tagmemic in the third stage of the model) that are specific to the environment (i.e., They are informed with critical thinking assumptions but stated briefly and intelligibly). These questions or reflections serve to guide the writer forward at specific points in the composing process. However, the questions are flexible enough to permit adaptation to the changing demands of the emerging text. As such, they permit the writer to advance in the composing process by making reasonable predictions that are based on the formal character of the writing. At the point at which the emerging text obliges the writer to adapt the original pattern of organization, the model is flexible to accommodate that adaptation. The questions that Marble suggested as heuristic strategies are relatively intelligible to the population for whom they were designed, despite the fact that they are reflective of fairly sophisticated philosophical concepts.

Despite the optimistic forays into the instruction of heuristics as discovery and

organizational tools for composition in the 1980's, it appears as if their effectiveness was limited. The difficulty with complex heuristic models like the tagmemic, however, ought not serve as an indictment of the use of heuristics in general. The complexity of both the tagmemic and the pentad were at odds with the character of the heuristic, at least as far as Gigerenzer (2004) understood it. Because the tagmemic and the pentad both seemed to require more instruction than the process they were meant to simplify, it is difficult to see the advantage they would offer. They violated two principles that Gigerenzer identified as being characteristic of effective heuristics. They were too complex and they were not based in the writing environment. It may be, however, that heuristics that permit a writer to proceed tentatively with ideas and strategies that, while not certain, provide a greater likelihood of organizing the writer's ideas around a particular theme, may still prove successful.

The Argument for the Use of Heuristic Strategies

If, as McCutchen (1996) has argued, one of the difficulties that novice writers experience derives from a strain on the capacity of their working memories, then strategies that might help them to reduce that memory load might be expected to have some effect in their development as writers. Heuristics may provide one of those strategies. The tradition of using heuristics as a means of guiding composition owes much to the investigations of heuristics that were undertaken by theorists outside the field of composition. Polya, working in 1957, advocated the use of problem-solving heuristics as decision-making strategies for students in mathematics. However, the understanding of heuristics that informs the work of psychologists such as Gigerenzer (2004) and Polya (1957), and the understanding of heuristics that is used by composition researchers (Hillocks, 1986; Lauer, 1970; Young et al., 1970), correspond in a number of significant areas. Each sees the teaching of heuristics as a way of introducing

students to a method of problem-solving through the isolation of discrete steps in the problem-solving process. In addition, each operates, to some extent, with the belief that problem-solving heuristics can be taught with systematic, explicit instruction.

General problem-solving strategies do not depend on localized subject knowledge to be effective. Polya (1957) argued that the formality of mathematical proof had little to do with the reality of problem-solving in mathematics. He claimed that success in finding solutions depended on a collection of *heuristics*, or knowledge of general strategies for problem-solving that did not guarantee a solution, but often helped. For Polya (1957), heuristics served to break a problem down into smaller, component parts that were easier to solve. Similarly, Perkins and Salomon (1989) proposed a flexible heuristic called *means-end analysis*, which they determined included “information about a beginning state, and end state (the goal), and allowable operations on states, all in compact notation” (p. 17). The program looked at a chain of operation for transforming the beginning state into the end state (e.g., solving puzzles). They theorized that “good thinking depended in considerable part on a repertoire of rather general heuristic knowledge” (p. 17). Perkins and Salomon (1989) identified general knowledge as “heuristics for problem-solving, memorizing, inventive thinking, decision-making, and general mental management . . . as to local knowledge, the part of knowledge specific to a domain like chess or mathematics, it was thought not very important” (p. 17).

In addition, Perkins and Salomon (1989) classified problem-solvers as expert and novice. They discovered that expert problem-solvers tend to employ *forward reasoning* when they come to problems they need to solve. Expert performance entailed “(a) a large knowledge base of domain-specific patterns; (b) rapid recognition of situations where these patterns apply; and (c) reasoning that moves from such recognition directly toward a solution by working with the

patterns” (p. 18). In contrast, novices:

tended not to see the relevant patterns, because they did not know them or lacked rapid recognition-like access to them . . . novices often solved problems by focusing first on the unknown and seeking equations or rules that bridged back from the unknown toward the givens (p. 18).

Perkins and Salomon (1989) called this type of reasoning *backward reasoning*, in contrast to the experts forward reasoning which moves from the known to the unknown.

It appears that decision-making strategies are most effective when the student has knowledge of the specific context in which those decisions are meant to be made. This knowledge, then, would seem to have little application to other domains. Paradoxically, however, if the knowledge is highly specific and is cued, primed, and guided, it does seem to be transferable (Perkins and Salomon, 1989). Though heuristics do not operate as a substitute for domain specific knowledge, they allow learners to probe the problem, looking for solutions on the basis of general problem-solving strategies. Schoenfeld (1985) found that it was possible to teach math students general heuristics in a “very contextualized way, so the heuristics make good contact with students’ knowledge base in the domain” (as cited in Perkins & Salomon, 1989, p. 20). In addition, Schoenfeld (1985) discovered that students could learn to monitor their own progress by asking themselves a series of questions: (a) What should one do in this situation? (b) Is the problem-solving strategy working? (c) What other strategy might be tried? By monitoring their problem-solving as they worked and by employing the heuristics they had been taught, students could avoid continuing in unproductive strategies.

Perkins and Salomon (1989) theorize that:

when faced with novel situations, people routinely try to apply knowledge, skills, and

specific strategies from other, more familiar domains. In fact, people commonly ignore the novelty in a situation, assimilating it into well-rehearsed schemata and mindlessly bringing to bear inappropriate knowledge and skill, yielding negative transfer. (p. 22)

However, Perkins and Salomon also say to say that it appears that when “general principles of reasoning are taught together with self-monitoring practices and potential applications in varied contexts, transfer is obtained” (p. 22). There are factors that will determine the degree to general reasoning and problem-solving strategies will transfer: the way in which the knowledge and skill were acquired; the way in which the individual uses the information in a new situation; and, the conditions of learning, such as cueing, practicing, and generating of abstract rules.

The IDDL Model for Invention and Decision-making

The IDDL model was designed, in part, to address the challenges identified both in the analysis of historical practices of college and university instruction in composition and in more recent research into the cognitive processes of composition and problem-solving. It was meant to meld traditional themes of instruction like audience and purpose with strategies based on insights from cognitive process theory and heuristics. Further, it was designed to facilitate the transition between the practices of novice writers and those of experienced writers. Flower and Hayes (1981) observed that novice and experienced writers differ in the way in which they manage the hierarchy of embedded decision-making that is required for composition. Where experienced writers made localized decisions on the basis of the way in which those decisions *could* contribute to the larger thematic structure, novice writers tended to list information and failed to connect that information to the larger theme. Flower and Hayes (1981) further observed that experienced writers are goal-directed with an underlying structure in place before they begin writing and that experienced writers were found to employ metacognition to guide their writing.

In developing the IDDL model, I was mindful of the need to scaffold the transition of novice writers to the practices of more experienced writers. As Berlin (1987) suggested, it is important that the composing process be made explicit. Similarly, as Corbett (1963) argued, students need careful systemized guidance at every step in the writing process. The argumentative essay, in addition to being the genre that is most commonly used in college and university (Quilligan, 2006), seemed to provide an organizational structure that students might be able to exploit more readily. As Corbett (1963) suggested, there is an identifiable advantage to teaching students to write essays in which the intent is to persuade an audience using logical proofs. He argued that the elements required by the argumentative essay (e.g., introduction, statement of facts, confirmation of the case, refutation of the opposing side, and the conclusion) encourage the writer to work from thesis, through discussion of themes and content, to conclusions in a unified and coherent way. It was Corbett's (1963) belief that this type of instruction was particularly effective with first-year students.

Flower and Hayes' (1981) reported, however, that some students have very limited problem-solving techniques that hinder them when composing. In Flower and Hayes' view, students have to see writing as a communication problem that they are attempting to solve, using all of the strategies that they have available. Flower and Hayes (1977) hypothesized that the teaching of heuristics provides writers with more choices when they run into difficulties during the composing process. They stressed the importance of teaching heuristics that assisted students in the process of planning toward a goal, translating ideas into words, and constructing a draft for an audience. They concluded that, in order to make a new heuristic an effective option for students, the students have to be presented with the heuristic in a classroom setting and then given the opportunity to practice using and applying the heuristic. The IDDL model was

designed to use single-cue heuristics to reduce the demands placed on students' cognitive resources and to facilitate problem-solving.

The model exploits three single-cue heuristics in particular. The first heuristic emerged from my hypothesis that experienced writers operate with an implicit understanding of the linear nature of an essay: essays begin with an introduction and end with a conclusion. The writer's purpose is to mark a coherent path from the former to the later in the exploration of a thesis. The second heuristic is one that has been identified in the literature as the anchoring heuristic (Kahneman & Tversky, 1973). The anchoring heuristic refers to the phenomena in which students use given benchmarks to guide their guesses in unfamiliar environments. The IDDL model exploits the anchoring heuristic, using it first to inscribe the writing space with a rough structure and then to embed questions in that structure that guide the writer's exploration of the themes and sub-themes that emerge from the thesis. The third heuristic, the foraging heuristic, has also been identified previously (Payne, Duggan, & Neth, 2007). The foraging heuristic applies the principle of diminishing returns to the research process. In the IDDL model, the anchoring heuristic permits the writer to focus attention on a specific aspect of the theme or subthemes. Using those anchors as points of departure, the writer then employs the foraging heuristic to engage in a limited exploration of the theme. Where the anchoring heuristic provides the starting point for each investigation, the foraging heuristic allows the writer to recognize the point at which further exploration is unlikely to yield useful returns. When the search for information begins to yield fewer and fewer useful results, it is reasonable for the writer to assume that the resource may no longer be fruitful.

The decision to draft the IDDL model as a template was informed by Gordon's (1996) belief that templates can be used as scaffolds to support learners as they move to new content

domains. She theorized that “the templates provide a cognitive support for problem-solving by establishing a framework for student presentation which will concentrate thought, facilitate investigation and the development of critical and creative thinking” (p. 4). Further, these templates challenge students to become active participants in the learning process. Templates have the potential to assist students in reorganizing their thoughts so that they make sense of not only what they see but also what they hear. Gordon argued that, by providing templates, instructors are “assisting students through a modelled form of outlining” (p. 5). However, Gordon also suggested that, in order for the templates to be effective, students need to be encouraged to develop their own understandings and interpretations of the template. The model is not meant to be a formulaic method of learning but rather to serve as a platform from which students exercise higher-order thinking skills. Among its other virtues, Gordon (1996) asserted that the modeling process is not faculty, learning style, or writing genre dependent.

The IDDL Model for Invention and Decision-making is designed to facilitate essay writing by guiding students through the early stage of composition using a series of coordinated heuristic strategies. These heuristics are meant to assist in the decision-making process at a point at which there is relatively little information to guide the students. The model provides a number of advantages: (a) it breaks the rhetorical problem into a series of related steps allowing the student to focus on the complex structure of embedded decisions one problem at a time; (b) it represents essay structure visually allowing students to conceptualize the relationship of the parts to the whole more easily; (c) it provides individual heuristics that are simple and easily remembered, reducing memory load; (d) it provides heuristics that are specific and contextualized; (e) it uses heuristics to facilitate an understanding of the relationship between an essay’s component parts; and, (f) it uses heuristics to facilitate problem-solving. The integrated

structure of single-cue strategies transforms the apparently creative writing process into a pragmatic, or step-by-step, process.

A brief explanation of the IDDL model follows below. For a more complete discussion of the model, refer to Chapter 3 or Appendix 1.

1. **Inscribe, or invent, the writing space:**
 - (a) In effect, how do we get from the beginning to the end of the essay?
 - (b) Represent the organizational strategy visually.
 - (c) Define the problem holistically (i.e., what is the purpose of the essay?).
2. **Define the problems locally** (i.e., at the paragraph level).
3. **Discover the evidence necessary to resolve each of the local problems.**
4. **Link the pieces** (i.e., paragraphs, or local problems, above) logically.

The IDDL model was designed to follow Corbett's (1963) protocols for the teaching of classical rhetoric. Corbett argued that classical rhetoric was the most effective method of instruction for first-year students because it foregrounds the structure of the essay. As novices, students often require explicit procedural guidance throughout the writing process. Corbett suggested that students benefitted from models which required them to draft single sentence thesis statements that identified the causal relationship between the elements of the essay. He theorized that this process facilitates the production of coherent pieces of unified writing by novice writers. By scaffolding the individual steps in the construction of an argument, instructors are better able to identify the relationship between the different elements of the essay. This principle is the basis of the IDDL writing model.

There are criticisms of the use of writing models. Some scholars suggest that the models tend to be formulaic (Dean, 2000; Wesley, 2000; Wiley, 2000), and that they appear to require

little in the way of critical judgment (Dean, 2000). Though the IDDL model was designed to be formulaic, it was not intended to absolve the writer of the responsibility to explore ideas in a critical way. Rather, it was meant to facilitate that exploration by providing a structural template to organize the thesis statement, sub-thesis, and evidence, freeing the writer to make critical judgments about the essay's content. It was designed to free novice writers from the burden of simultaneously having to attend to the essay's structure and the development of ideas. Though Wiley (2000) blamed the limits of models like the five-paragraph essay for the failure of some students to explore ideas fully or to question their own assumptions and beliefs, it is not inevitable that the use of models will lead to that outcome. If students are taught to use models that demand active engagement in the decision-making process, the essays they produce may be as substantial and sophisticated as essays produced in any other manner. The benefit of the IDDL model is that it may provide the support required for students who might otherwise struggle with writing assignments.

Conclusion

Despite the acknowledged importance of writing to the college and university curricula, there is no consensus on the desired outcomes of writing programs and writing requirements. The spectrum of educational approaches, both historically and at the present time, reflect that diversity. It is important to note, therefore, that any recommendation for instructional strategy needs to be contextualized within the objectives of any particular writing program. However, given the degree to which mastery of the argumentative essay is recognized as an indication of writing competence at colleges and universities, a strategy that improves student performance in that particular form may prove useful.

A review of the literature surrounding the cognitive process theory suggests that

experienced writers focus to a significant degree on the decisions that drive the development of meaning. Novice writers, by contrast, are over-taxed by the memory requirements that are needed to manage the complex act of writing, simultaneously trying to attend to decisions related to writing mechanics, organizational structure, and thematic development. The complexity of the emerging text is so great, in fact, that novice writers are often unable to determine which aspect of the composing process requires their attention at any given moment. The advantage of writing instruction that relies upon training in specific heuristic models is that it allows novice writers to off-load cognitive work to the environment by using visual models to foreground the essay's organizational structure, questions to guide decisions, and principles of rhetorical development embedded in the models. It is important to note that this kind of model does not relieve novice writers of the obligation to make the decisions that essay-writing requires, and thus is not as vulnerable to criticism that writing models foreclose a thorough examination of an essay's thesis. This model is designed to minimize the demands on working memory by integrating an organizing structure within the model, but it also foregrounds the important decisions that lead to the development of meaning. The model I propose is predicated on an understanding of both the depth and breadth of knowledge required for writing competence as identified by Booth (1963) and others and the difficulty novice writers have in acquiring that knowledge. It is designed to bridge the gap between the performance of novice and experienced writers through the use of heuristics.

Chapter 3

Methods

Purpose of the Study

The purpose of this study was to investigate the effectiveness of teaching students to write essays using the IDDL decision-making strategy. The study was designed to collect data both before and after IDDL writing instruction had taken place. This research was also designed to lead to a greater understanding of the importance of using direct explicit instruction of single-cue writing strategies to make the invention process more manageable.

In order to collect data, a mixed method explanatory design approach (Creswell, 2008) was utilized. The quantitative approach was used to gather a large amount of data from all targeted students to form a baseline of students' ability to write an essay. This took the form of pretest and posttest writing samples provided by the students. Individual interviews were then conducted using a qualitative approach to investigate the respective student's individual understanding of the IDDL writing model. The overall purpose of this design was to use qualitative data to explain or enrich initial quantitative results.

Research Questions

The quantitative research questions that informed this study are:

1. What is the effect of teaching first-year university students single-cue heuristics as measured by their growth in essay writing between a pretest and posttest measure?
2. What is the effect of teaching first-year university students single-cue heuristics as measured by their final essay grades at the end of term?
3. What is the effect of gender on students' writing ability as measured by their growth in essay writing between a pretest and a posttest measure?

The following questions formed the basis for the individual interviews. As is often the case with semi-structured interviews, however, the answers that the students gave sometimes led the research in other directions.

1. Tell me how you begin writing your essays in ARTS 1110?
2. Tell me how you make decisions about organizing your essay.
3. Tell me what strategies, if any, did you find to be helpful in completing your essay?
What strategies, if any, were not helpful?
4. Do you feel more confident writing essays now that you have taken ARTS 1110?
Why, or why not?

Statement of Hypotheses

The following hypotheses were generated to guide this investigation of the effectiveness of teaching students to write essays using the IDDL decision-making strategy.

H_0 regarding change over time: there will be no change over time in writing ability for both the control group and the experimental group taken together.

H_0 regarding growth patterns: there will be no difference in growth patterns in writing ability between the two conditions (control and experimental).

H_0 regarding final essay scores: there will be no difference in final essay scores between the two conditions (control and experimental).

H_0 regarding gender differences: there will be no difference in gender and no different patterns of writing ability growth for gender.

Context of the Study

The research was carried out at the University of Manitoba in Winnipeg, Manitoba. The University of Manitoba is one of four universities in the Province of Manitoba, and has both

undergraduate and graduate programs in many professional schools and faculties. In addition the university serves a large population of students that are both Canadian and International.

The University of Manitoba was chosen because I am an instructor of first-year students at this institution. Participants were recruited from first year “W” courses offered at the University of Manitoba through University 1. “W” courses at the University of Manitoba are courses that have been vetted by the Department of English and determined to satisfy the Guidelines for writing courses. The criteria for “W” courses (i.e., in the minimum requirements to qualify for the written English requirement as approved by Senate) include:

- a minimum of three pieces of written work of 3-5 pages, or
- a minimum of two pieces of written work of 6-8 pages, and,
- a minimum total word count of 3,000; and,
- instructor feedback on style as well as content, and,
- The written work must include a written description or argument that is clear, concise, and logically structured, and that reflects an appropriate awareness of the audience or readership being addressed.

<http://umanitoba.ca/faculties/arts/media/writtenglishrequirementinstructions.pdf>).

ARTS 1110 is an interdisciplinary course on composition, research, and critical thinking, that is designed to facilitate the transition of students to the university environment. The course includes a weekly lecture of one hour and fifteen minutes which I taught and a weekly writing seminar of one hour and fifteen minutes facilitated by a teaching assistant. Each section is comprised of approximately 180 students who are divided into seminar groups of approximately 30 students. The lecture portion of the course is characterized by lectures on concepts and content while the writing seminar sections are characterized by discussions of the application of

concepts and opportunities to use those concepts in the students' own writing assignments. There is a direct connection between the content of the lectures and the activities in the writing seminars.

Participants of the Study

First-year students from two September-December 2011 University of Manitoba ARTS 1110 Introduction to University sections served as the participants for this study. The control group and the experimental group were drawn from intact classes of approximately the same number of students. Because registration in the course from which participants were drawn was restricted to students who had completed fewer than 12 credit hours of university study, it was assumed that participants would be relatively similar in the degree of familiarity each had with academic writing in first-year university studies. At the time of the study, students enrolled in the course would be registered in University 1 and thus would not have had a major. Because the control and experimental groups were drawn from intact classes, there was no way to control for age, incoming GPA, gender, or SES. I taught both sections of the course.

In quasi-experimental studies, random assignment of individuals is not possible, either because random assignment is logically impossible (e.g., we cannot assign individuals to a gender or age group) or because group assignment has already been implemented by someone other than the researcher (e.g., classroom assignments are typically determined by the administration). The groups are intact. This is often characteristic of educational research where researchers do not ordinarily have complete control of group selection due to the subjects of the studies being students in a natural school setting.

In each of the groups, the control and experimental, students were invited to participate. Participation was not mandatory and the students self-selected to participate based on the class

that fit their timetable; the university does not place specific students in specific sections. Each section was made up of approximately the same number of students. The research was undertaken with the assumption that the participants from each section would have similar backgrounds. There was approximately the same number of females as males as well as the same number of native English speakers and non-native English speakers. This ensured that the two groups being sampled did not have any other factors that could impact the research. The students were not told that they were part of a research study to avoid contamination of results. This deception was necessary. Some students might have changed their normal behaviour and responded more favourably to the experimental treatment if they were aware that they were participating in a study.

In the first phase, 110 students, from the control group and 146 students from the experimental group wrote the pretest writing sample. In the final analysis because the students pretest and posttest writing samples were matched and compared, only the students who had provided both a pretest and a posttest writing sample were included in the data analysis. In the third phase, the number of students who wrote the posttest writing sample in the control class was 22 and in the experimental class there were 77 students who participated. The high rate of attrition, especially in the control group, could be attributed to two factors: attendance and withdrawal. Some of the students who wrote the pretest writing sample were not in class when the posttest writing samples were obtained, and some students had dropped the course. While I had expected some attrition from both groups, there was no way of predicting how many of the control group participants who wrote the pretest would be available to write the posttest.

The students who participated in the quantitative part of the study were also recruited for the qualitative phase. When the students signed the consent form to participate in the study, there

was a section on the form that asked them whether they would be willing to be individually interviewed about the writing instruction they were receiving in ARTS 1110. Only those students who self-selected to be interviewed were contacted and asked if they were willing to be individually interviewed. From this pool of potential participants, ten students from the control group and ten students from the treatment group (i.e. a total of twenty students) were selected to be interviewed

In order to measure the awareness of the writing strategies, an independent researcher contacted students from both groups, representing herself as a researcher who was investigating students' awareness of writing strategies. In this way, the students had no way of knowing that the instructor was connected to the research. The deception was necessary to ensure that the relationship between the instructor and the students did not affect the manner in which the students performed on either the pretest and posttest measures and/or the individual interviews.

Though it was expected that there would be some degree of treatment mortality or attrition, the size of both the control group and the experimental group was large enough to accommodate that attrition. To account for the possibility of test familiarity, students were instructed to choose different writing prompts for the pretest and posttest writing samples. Attendance was taken in the writing seminars; therefore, it was relatively simple to identify students who had been attending the writing seminars. Because the Teaching Assistants were teaching and reinforcing, the different writing concepts in both the control group and the experimental group, the students had two opportunities each week to be exposed to the respective writing models. There was very little chance that a student from the control group attended the experimental class or that a student from the experimental class attended the control class since the lectures for the experimental group and the writing seminars for the control group

were held at the same time, and vice versa.

Independent Variables

1. The first independent variable was passage of time. The students wrote a pretest essay at the beginning of term and a posttest essay at the end of term. The pretest and posttest essays were written to prompts of sample MCAT© questions.
2. The second independent variable was grouping of the sections into a control group and an experimental group. The control group received regular instruction in writing as process and the second section, the experimental group, received an equal amount of instruction using the IDDL model.
3. The third independent variable was gender.

Dependent Variables

There were two dependent variables: (a) change in writing quality from the pretest to the posttest; and, (b) the score on the final class essay.

Research Instruments

1. An assignment sheet with four statements, drawn from sample questions used on the MCAT©, was given to students as a way for them to provide a short writing sample, once in September 2011, and again in November 2011 (see below).

The four questions used for the writing sample were:

***If you play with fire, you might get burned.**

Write a unified essay in which you describe the following tasks: Explain what you think the above statement means. Describe a specific situation in which you do not get burned playing with fire. Discuss what you think determines whether or not getting burned when playing with fire is dangerous.

***In war, truth is the first casualty.**

Write a unified essay in which you perform the following tasks: Explain what you think the above statement means. Describe a specific situation in which truth is not the first casualty. Discuss what you think determines whether or not truth is a casualty of war.

***Education comes not from books but from practical experience.**

Write a unified essay in which you perform the following tasks. Explain what you think the above statement means. Describe a specific situation in which books might educate students better than practical experience. Discuss what you think determines when practical experience provides a better education than books do.

***Scientific inquiry is rooted in the desire to discover, but there is no discovery so important that in its pursuit a threat to human life can be tolerated.**

Write a unified essay in which you perform the following tasks. Explain what you think the above statement means. Describe a specific situation in which a threat to human life might be tolerated in the pursuit of scientific discovery. Discuss what you think determines when the pursuit of scientific discovery is more important than the protection of human life.

*copyright© 2004, Best Sample Questions (sample MCAT questions).

The pretests/posttests were coded for identification purposes only by a research assistant at the end of term and before marking began. The purpose of the identification coding was to prevent the instructor and the independent markers from identifying papers as either pretest or posttest. This was to ensure that marker bias did not impact the findings.

2. Two analytic marking rubrics that had been adapted for use in this study (see Appendix D).
 - The first analytic rubric was used to mark the essays based on the following criteria: thesis/focus (clarity of purpose), organization, and support/reasoning. The scores ranged from 1 representing limited proficiency to 4 representing high proficiency. The thesis/focus criteria were scored on the basis of the degree to which the thesis statement was clearly articulated and matched the writing task. The criteria for scoring organization included the use of organizational strategy, the degree to which the organization supported the thesis statement and purpose, and the degree to which the sequence of ideas and transitions were effective. The last index was support/reasoning which was scored on the basis of the degree to which students were able to provide a substantial, logical, and concrete development of ideas, with an explicit discussion of underlying assumptions.
 - The second analytic rubric measured the following criteria: organization, coherence, and content. The scores ranged from 1 which represented ineffective techniques to 4 which represented excellent techniques. The score for organization was based on the degree to which the student demonstrated clear purpose and focus, the degree to which the arguable claim was clearly expressed, and the degree to which organization was purposeful and effective. The score for coherence was based on the degree to which the writer made connections between and among paragraphs, the degree to which ideas were logical, and the degree to which the transitions served the argument established by the arguable claim. The score for content was based on the degree to which supporting evidence was relevant and effectively integrated, and the degree to which the essay had

claims and ideas that were well-supported and well-developed. The score for content was also based on the degree to which alternative perspectives and opposing viewpoints were explored and acknowledged.

3. Final class essays written by each of the participants in partial fulfillment of the course requirements. Unlike the pre and posttest writing samples, these essays were not written to specific writing prompts.

Procedures

- At the beginning of term in September 2011, before any instruction had taken place, each student in each of the two identified sections (i.e., the control section and the experimental section) were asked to provide a short writing sample based on one of four questions. This twenty-five minute timed writing sample served as the pretest. The writing samples were sealed in envelopes and given to the research assistant who was responsible for ensuring that the investigator and the teaching assistants did not have access to the writing samples. The same process was followed in November 2011.
- One class, the experimental group, was systematically taught four single-cue writing strategies by me that were designed to improve students' understanding of the writing process. In the first class with the experimental group I spent thirty minutes introducing the IDDL writing model for teaching writing. In the first class with the control group, I spent the same amount of time introducing students to the process theory of writing, identifying the need to go through the three stages of planning, translating, and revision. This instruction took place over the course of the September – December 2011 term.
- Teaching assistants were given training, in a two hour period over the course of one day, prior to the start of the term, in the use of the IDDL writing model. In addition,

supplemental training in how to teach the writing strategies took place one hour a week for the duration of the term.

- At the end of the term (in November 2011), each student in the two identified sections was asked to provide another short writing sample based on one of four questions provided by me. Each student was instructed to select a different question than the one they had selected at the beginning of the term (September 2011). This second writing sample served as the posttest to control for the effect of maturation. The posttest essays were collected and sealed in envelopes by the research assistant.
- After the posttest (November, 2011), ten students from the control group and ten students from the experimental group were invited to participate in individual interviews during which they were asked to describe their respective decision-making strategies for text production at specific points in the writing process. The students were chosen from those who had agreed to be individually interviewed. The interviews were conducted by a research assistant who informed the students that she was conducting a research study on students' perceptions of their writing strategies. In the interviews students were asked to expand on their own experiences with writing in ARTS 1110.

Students were prompted to talk about how they went about writing their essays and to explain the reasons behind their ways of working. The interview questions consisted of statements such as: (1) Tell me how you begin writing your essays in ARTS 1110, (2) Tell me how you make decisions about organizing your essay, (3) Tell me what strategies, if any, did you find to be helpful in completing your essay? What strategies, if

any, were not helpful? (4) Do you feel more confident writing essays now that you have taken ARTS 1110? Why, or why not?

The interviews were transcribed and sent back to the participants for member checking.

- In December 2011, data from the pretest and posttest essays were analyzed for significant differences between the control group and the experimental group in terms of writing quality. Data were analyzed using two established analytic rubrics to guide marking (see Appendix D).
- In March 2012, an analysis was carried out using the students' scores on the second required class essay submitted in the 11th week of the course. This mark was compared between treatment groups with the scores being adjusted (co-varied) by the six pretest scores from the analytic rubrics. The class essays were scored on content which was marked out of 70% and grammar and composition which were marked out of 30%. Content was scored according to the following criteria: introduction and thesis, resources/research, format, reasoning, organization and clarity, and conclusion. Each of the sub-sections was marked on the basis of the degree to which students met the established criteria. Grammar, syntax, spelling, punctuation, and diction were scored on a scale that ranged from incomprehensible to few errors. In addition, the teaching assistants provided detailed feedback on each of the criteria and included suggestions for improvement. Students were then provided with the opportunity to re-write their essays.
- The IDDL model was designed to foreground the relationship between the argumentative proposition of a thesis statement and the organizing structure of an essay. While the pretest/posttest samples were, admittedly, short writing assignments, it was expected that the principles of organization reflected in the IDDL model might be used in a similar way

in both the tests and the essays. One of the analytic rubrics was designed to measure organization, coherence between ideas, and use of content. These three elements are stressed in the IDDL model and therefore I assumed that the students in the experimental group would have scored higher in the posttest essay if they had used the model when responding to the pretest/posttest writing prompts. I also assumed that the IDDL organizational strategy would be detected by the second rubric which measured organization, the thesis/focus of the essay, and support/reasoning.

Instructional Procedures

- The Introduction to University course consists of two 75 minute time slots each week. On one of the two days, I teach the students in a lecture of approximately 180 students. On the second day, the students attend a writing seminar of approximately 30 students that is taught by Teaching Assistants (TAs). The lecture portion of the course deals with topics that are designed to assist students in making the transition to the university: understanding the process of learning; understanding the role that memory plays in learning; understanding the effect of learning styles; understanding the advantage of practicing metacognition (i.e., the monitoring of one's own learning); and understanding the practice of critical thinking across curriculum. In the writing seminars, the TAs are responsible for guiding the students through the process of learning to write an argumentative essay.
- I taught the students of both groups in a large lecture theatre (capacity of approximately 200 students) using PowerPoint slides which were posted online for the students to review. The writing seminar slides and handouts were also posted online. The course materials included two textbooks: one was a custom textbook published for the exclusive

use of ARTS 1110 which included the topics that were covered in the lecture. The second textbook was a writing handbook that used the process approach to writing. The control and experimental groups used the same textbooks in the course.

- Instruction in the use of the IDDL writing model for teaching writing began by asking students to choose whether they would prefer to write one essay of 1500 words or answer 15 questions of 100 words each. Thus far, I have never had a single student ask to write the essay rather than answering the questions. This led to the second question of why they made the choice that they did. The questions were designed to open a discussion concerning the difference between pragmatic tasks and inventive tasks. The purpose of the discussion was to reveal to students the challenge that inventive tasks pose: the need to create an apparently novel structure through which to explore an idea rather than simply providing information in response to specific questions.
- The experimental group was taught using the IDDL Model for Invention and Decision-making. The IDDL model is a visual representation of the writing process that uses a series of coordinated heuristic strategies to assist students in their decision-making as they progress through the different stages. IDDL stands for **I**nscribe the writing space, **D**efine the rhetorical problems locally, **D**iscover the information necessary to solve the local rhetorical problems, and **L**ink the individual units of the essay logically (see Appendix A). The integrated structure of single-cue strategies utilized in the IDDL model transforms the apparently creative writing process into a pragmatic, or step-by-step, process. Students were explicitly instructed to recognize that the model is dynamic, accommodating as many paragraphs as the essay requires. It is not a five paragraph essay.
- Though the IDDL writing model has four discrete elements as described above, the first

three strategies are intrinsically linked. Therefore I taught the first three (i.e., IDD) for the first two weeks and the entire system (i.e., IDDL) for the last two weeks. This gave the students four weeks of instruction while they were completing their first 1500 word essay.

- The teaching of the IDDL model occupied 25 minutes of each lecture for eight weeks with a two week interruption while students were preparing for the midterm. The discussion of the model corresponded with the period of time that the students were composing their essays in the writing seminar. At the beginning of each lecture, I illustrated the IDDL model on the white board and identified ways in which it might be used in the writing assignments in the seminar sections. As is generally the case in my lectures, students were encouraged to ask for clarification or further explanation.
- In the lecture portion of the course, students in the experimental group were explicitly taught the IDDL model as a method of organization. I explained the model and worked through its various steps, reminding students that the teaching assistants would be using it to guide them in the writing seminars. Students were provided with examples. Students were not advised that they would be expected to follow the model because, in fact, there was no requirement to do so. The model was offered as an aid to composition not presented as a specific course requirement. Though it was my expectation that students would use the model, I have never assigned grades on the basis of the strategies students use to organize their ideas. Given the idiomatic processes that some writers use effectively, it seemed inappropriate to insist that students adhere to this or any other writing strategy.
- The students in the control and experimental groups received a comparable amount of

instruction time in each class. I taught the process of writing to the control group following the standard writing instruction that has been used in ARTS 1110 for the past five years. That is, students normally learn how to formulate an academic essay using a step-by-step instruction process that includes: (a) strategies for writing a thesis statement; (b) strategies for writing an outline; (c) strategies for writing an annotated bibliography; (d) strategies for writing a rough draft, and (e) strategies for preparing a final draft. As was the case with the students in the experimental group, the students in the control group received four weeks of writing process instruction while they were completing their first 1500 word essay. These concepts were reinforced in the writing seminars with the teaching assistants.

- An equal amount of time was spent in the lectures for both the control and experimental groups discussing strategies that could be used to organize an essay. In the writing seminars that were attached to the course, the teaching assistants taught using either the standard writing process model with the control group or the IDDL writing model with the experimental group.
- When the students began work on their second essay assignment, I spent thirty minutes of class time reminding the students of the IDDL model, and asking the students to reflect upon their use of the model for the first essay. The teaching assistants continued to emphasize the use of the IDDL model in the writing seminars. In the control class, I also spent thirty minutes of class time reminding the students about the process approach to writing before they began work on their second essay assignment. The teaching assistants in the control class continued to stress the process approach in the writing seminars.

- In order to effect a gradual release of responsibility, the degree of explicit instruction diminished over the course of the term. During the first four weeks, I spent thirty minutes in each lecture explaining the IDDL model and identifying the ways in which it could be used to guide composition in students' individual essay assignments. During the corresponding weekly writing seminar, students received explicit instruction in the use of the IDDL model to improve procedural efficiency in their own writing assignments. This reinforced the concepts that I was discussing in the lecture.
- As part of the course curriculum, students in both groups were required to write two essays of 1500 words each, with an opportunity to rewrite the first essay after marking by the teaching assistants. In the experimental group, the feedback on the first draft of the essay included reminders of the ways in which the first three teaching strategies could have been used to improve composition. In the control group, students were reminded of the way in which traditional methods of teaching rhetoric could have been used to improve their writing. In each group, the respective writing strategies the students had been taught were reinforced in writing conferences with the teaching assistants. The time on task in each case was the same. The first essay was due in mid-October. At this point, I had introduced the students to all four of the writing strategies.
- To encourage students to work through the various stages of the writing process systematically, students were given participation marks for attending the writing seminars. They were also required to do one oral presentation, write a midterm exam, and write a final exam. The TAs and I were both available to meet with students during office hours if they were having difficulties with the assignments.

Teaching Assistant Development

In a two day workshop conducted prior to the beginning of term in September 2011, I provided all the teaching assistants in Arts 1110 Introduction to University with instruction in the content and pedagogy used in the course. They were instructed in the teaching of writing as process. In particular, they were taught to assist students to work through the writing of essays using a series of interrelated assignments. At that point, they were provided with weekly scripts to follow in the seminars in an attempt to ensure that the writing instruction would remain consistent in the individual seminars in each of the two groups (i.e., the individual seminars of the control group and the individual seminars of the experimental group). Additionally, the TAs in the control group and the TAs in the experimental group each met with me once a week during the term to review both content and teaching procedures for each upcoming class. The six teaching assistants who were part of the experimental group were given additional training in the use of the IDDL writing model for teaching writing.

Teaching assistants who instructed the students in the experimental groups were given training in the use of the IDDL writing model in a two hour period over the course of one day prior to the start of the term. At that time, I worked through examples of ways in which the model might be introduced to students. The teaching assistants were given a series of slides (see appendix C). I modeled the use of the slides. Throughout the duration of the experiment, I met with the teaching assistants in the experimental group once a week to discuss concerns they might have with the writing seminar in general and in the use of the IDDL model in particular. Though the teaching assistants reported few concerns throughout the term (e.g., some students indicated that the process seemed burdensome; some students used the model in the seminar but appeared to submit essays that were different from the drafts they had developed), they did not

indicate any concerns with their own understanding of the IDDL model. Only after the term had ended did the teaching assistants suggest, anecdotally, that they had had any difficulty in persuading students to work with the model.

Analysis of Data

Quantitative Analysis

The data obtained in this investigation were processed using SPSS (Statistical Package for the Social Sciences) and analyzed in three stages: (1) an analysis of the within-subjects effects of treatment on the overall writing scores between the pretest and posttest essays; (2) an analysis of the between group effect, as measured by the difference in writing scores from the pretest to the posttest writing samples using a repeated measures design, and (3) an analysis of the second essay score employing a univariate analysis of variance with covariance.

In order to measure the change in writing quality from the pretest to the posttest, I was looking for: (a) evidence of a single controlling thesis with an arguable proposition; and, (b) evidence that students had selected supporting reasons that were relevant and that demonstrated an awareness of competing views. To ensure that the evaluation was not skewed by my personal bias, two independent markers were hired to mark the pretest and posttest writing samples according to detailed marking rubrics.

The significance level was set at $\alpha = .05$. The data analysis sought to identify whether there was a difference between the performance of students who were taught the traditional writing strategies and those who were taught the IDDL writing model from pretest to posttest. By comparing the results between the control group and the experimental group, and analyzing the data, the research sought to determine if teaching the four writing strategies had a significant effect on writing performance.

This study originally employed a 2 x 2 x 2 analysis of variance (group x pretest/posttest x gender) design. The independent variable of gender was not analyzed because the numbers were not robust enough to get a reliable measure. There were only five female students in one of the treatment groups. In the final statistical analysis, a 2 x 2 analysis of variance within and between subject variables (group – control or experimental) and one repeated measure (time, pretest, posttest) was employed as was an analysis of covariance. The second essay score was evaluated employing a uni-variate analysis of variance with covariance with treatment group as the independent variable and the six pretest scores as covariates.

Qualitative Analysis

In order to measure the awareness of the writing strategies a research assistant contacted students from both the control group and the experimental group to participate in individual interviews representing herself as a researcher who was investigating students' awareness of writing strategies.

Individual interviews were analyzed qualitatively and coded for themes by me and the research assistant. Before beginning the process of coding for themes, we read through the transcripts to get a broad overview of the emerging themes. Once the initial codes had been identified for the first interview, a method of recursive coding was employed for the remaining transcripts. I trained the research assistant in the method of recursive coding. Any codes that had been identified subsequent to the first reading were added to the coding system. When coding was complete, the research assistant and I met to validate codes and derive relationships from the data. The themes were confirmed, modified, or discarded on the basis of discussion and evidence from the data. In this way, I sought to establish inter-coder reliability, consensus, and verification of the emerging themes. The analysis was intended to determine the perceptions of

students concerning whether the teaching of the IDDL writing strategies had any influence on the development of composition strategies. .

Chapter 4 will present the results of the analyses and discussion of the results.

Chapter 4

Results and Discussion

Introduction

This chapter will provide a report of the findings that emerged from this research project. The research questions underpinning the research were used to focus an investigation into the effect of a particular composition model (IDDL) on the performance of students learning to write argumentative essays. As indicated in Chapter 1, the three primary quantitative questions guiding the research were:

1. What is the effect of teaching first-year university students single-cue heuristics as measured by their growth in essay writing between a pretest and posttest measure?
2. What is the effect of teaching first-year university students single-cue heuristics as measured by their final essay grades at the end of term?
3. What is the effect of gender on students' writing ability as measured by their growth in essay writing between a pretest and a posttest measure?

The following qualitative questions formed the basis for the individual interviews. As is often the case with semi-structured interviews, however, the answers that the students gave sometimes led the research in other directions.

1. Tell me how you begin writing your essays in ARTS 1110?
2. Tell me how you make decisions about organizing your essay.
3. Tell me what strategies, if any, did you find to be helpful in completing your essay?
What strategies, if any, were not helpful?
4. Do you feel more confident writing essays now that you have taken ARTS 1110?
Why, or why not?

The study was conducted at the University of Manitoba during the fall term (September – December 2011), using participants enrolled in two daytime sections of an Introduction to University course that I taught. Classes were randomly selected to serve as either the control group or the experimental group based on the assumption that participants in each group would be relatively similar.

The purpose of this study was to investigate the effectiveness of teaching students to write essays using the IDDL decision-making strategy. This research was designed to lead to a greater understanding of the importance of using direct explicit instruction of single-cue writing strategies to facilitate writing decisions. The term IDDL is an acronym for the writing model that was designed for this study. The model is intended to lead writers through the following steps: **I**nscribe the writing space; **D**efine the rhetorical problems locally; **D**iscover the information necessary to solve the local rhetorical problems; and, **L**ink the individual units of the essay logically. It is described in greater detail in chapter 3.

The quantitative data were analyzed using a 2 x 2 analysis of variance ANOVA repeated measures design to measure change, if any, both within subjects and between subjects for each variable. A repeated measure design allows the researcher to draw inferences about the way in which conditions and phenomena are related to one another (e.g., how instruction in the IDDL writing model corresponds to change in writing ability). In addition, the use of a treatment design allows the researcher to infer the possibility of causal relationships between treatments and effects. The quantitative results reported here are drawn from a study in which pretest and posttest data were obtained using writing samples.

The qualitative data were gathered from individual interviews conducted with twenty students (10 from each group) who self-selected to take part in the research. Each student was

interviewed once in November 2011 about their perceptions of the writing instruction they had received in their first-year ARTS 1110 - Introduction to University course. The individual interviews were conducted by a research assistant to ensure the students did not feel obliged to participate. Once the research assistant had conducted the interviews, she transcribed them and assigned pseudonyms to the participants to ensure that I would not know which students had participated. In addition, I was not aware of the group to which each of the individual interviews belonged. This procedure was followed to ensure that my interpretation of data could not be guided by bias. The participants' responses to each of the interview questions were collected and coded into categorized themes. The codes were developed using both the responses to the general questions that had been identified in Chapter 1 prior to the study and the responses to more specific questions that emerged during the interviews. The researcher assistant and I read over the transcripts individually, coding them using recursive coding. The themes were then compared. The inter-coder reliability was 89%. Direct quotations from the participants have been included in this report in an attempt to provide clear, detailed information about the students' perceptions of the writing instruction they received.

Statement of Hypotheses

The following hypotheses were generated to guide this investigation of the effectiveness of teaching students to write essays using the IDDL decision-making strategy.

H₀ regarding change over time: there will be no change over time in writing ability for both the control group and the experimental group taken together.

H₀ regarding growth patterns: there will be no difference in growth patterns in writing ability between the two conditions (control and experimental).

H_0 regarding final essay scores: there will be no difference in final essay scores between the two conditions (control and experimental).

H_0 regarding gender differences: there will be no difference in gender and no different patterns of writing ability growth for gender.

Data Analysis

Quantitative Analysis

The first null hypothesis was concerned with possible changes in writing ability over time for both the control group and the experimental group taken together. The results displayed in Table 4.1 indicated that there was a significant effect for every measure, but content. These findings do not support the null hypotheses and, therefore, indicate that the majority of the investigator's null hypotheses must be rejected. However, the null hypothesis can be accepted for the measure 'content'.

For the main effect of time, analysis indicated that the entire group (both control and experimental) grew significantly on five of the six measures, content being the exception, from the pretest to the posttest (p values ranging from $.001$ to $.010$). The two-way univariate analysis of variance with repeated measures also indicated that there was a significant interaction in all but one of the analytic scores, the exception being content ($p = .078$). The means and standard deviation and results of the F -tests are displayed in Table 4.1. As can be seen in Figures 4.1 – 4.6, in all cases, except content, the control group had significantly greater growth than the experimental group from the pretest to the posttest. All tests met the assumption of sphericity as measured by Mauchly's Test of Sphericity (all $\chi^2 = 1.000$).

In Table 4.1, although there was a pretest to posttest effect on every measure but content these effects are not interpretable in light of the time x treatment interaction.

Table 4.1

Time across Groups

Measure	Pretest (<i>N</i> =99) <i>M</i> (<i>SD</i>)	Posttest (<i>N</i> =99) <i>M</i> (<i>SD</i>)	<i>F</i> (1,97)	<i>p</i>
Thesis/Focus (Rubric 1)	2.19 (.7912)	2.55 (1.023)	18.734	.001
Organization (Rubric 1)	2.19 (.8040)	2.43 (.8227)	11.630	.001
Reasoning (Rubric 1)	2.15 (.8251)	2.45 (.8116)	15.272	.001
Organization (Rubric 2)	2.31 (.8880)	2.49 (.8497)	8.117	.005
Coherence (Rubric 2)	2.59 (.7694)	2.73 (.7535)	7.002	.010
Content (Rubric 2)	2.162 (.8536)	2.27 (.9015)	3.165	.078 (NS)

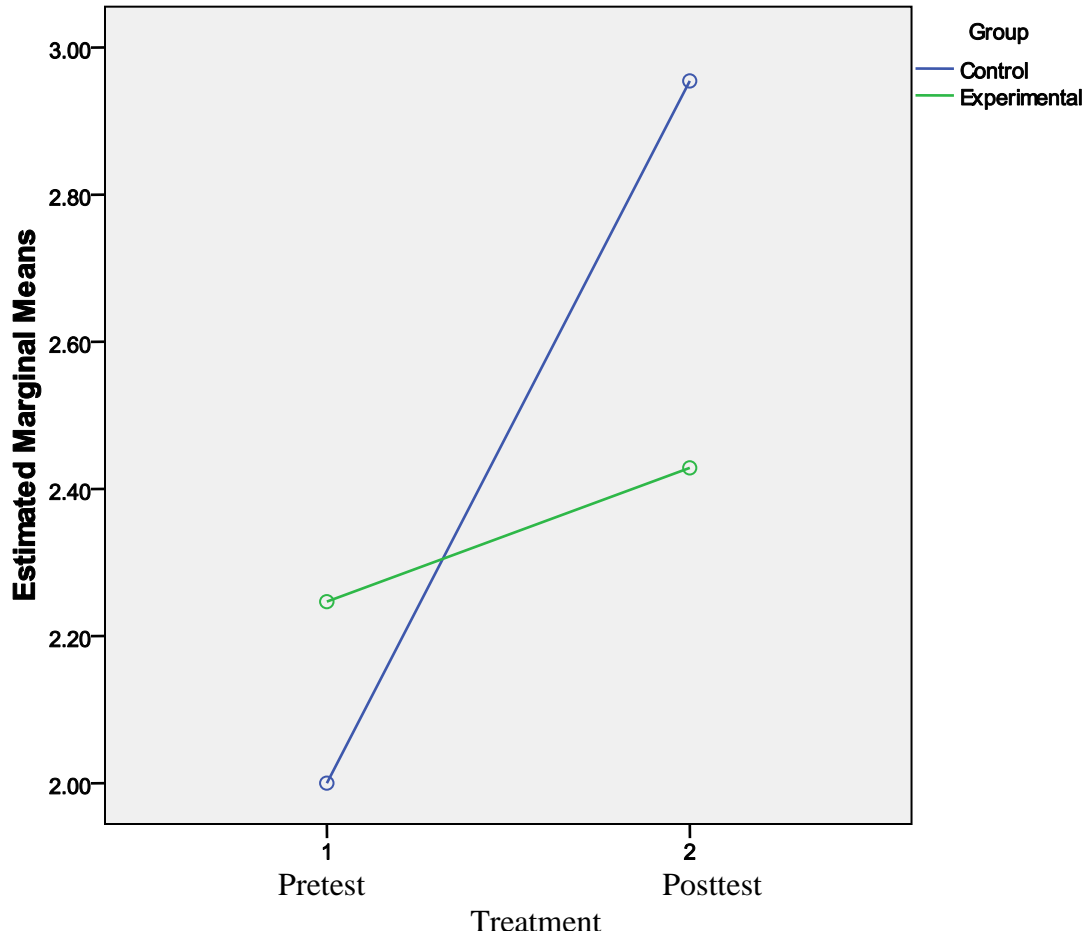


Figure 4.1. Pretest and Posttest Scores for Thesis/Focus. This figure illustrates the difference between the pretest writing sample and the posttest writing sample for both the control group and the experimental group.

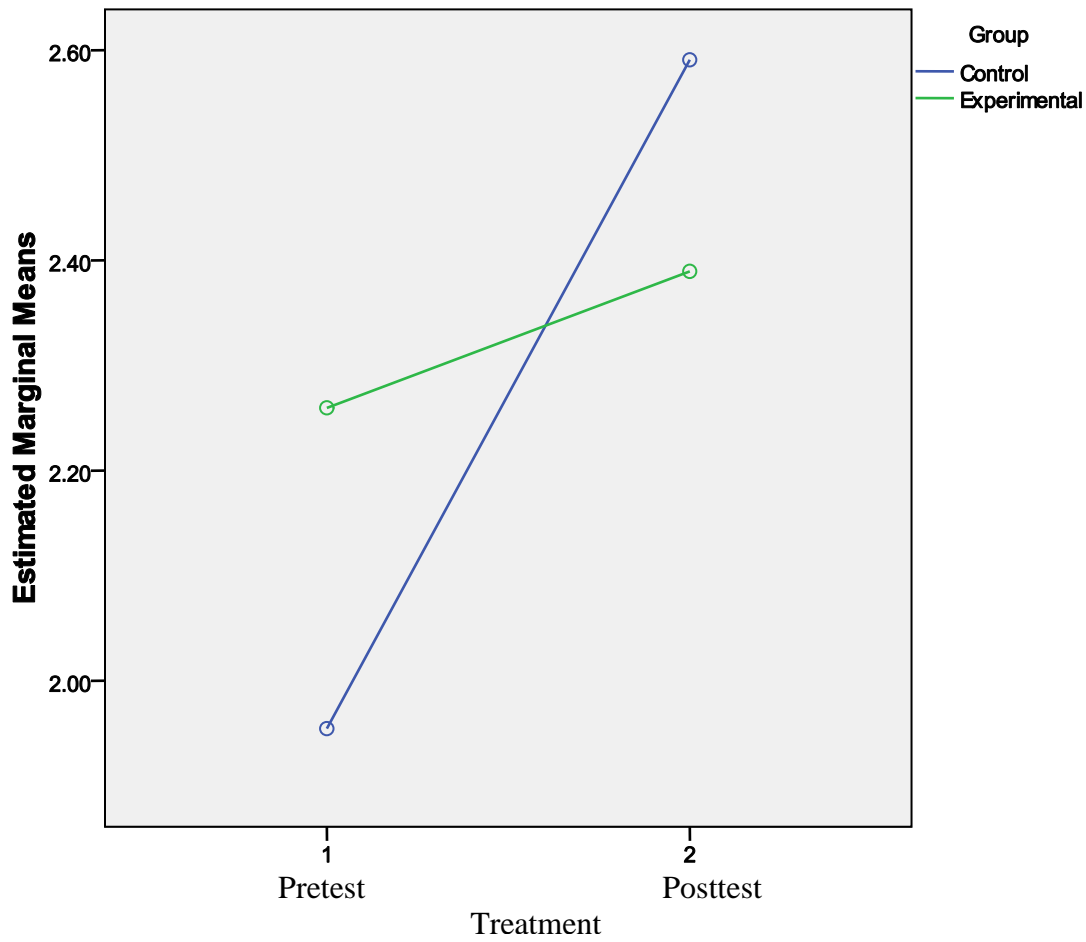


Figure 4.2. Pretest and Posttest Organizational Structure (Rubric #1). This figure illustrates the difference between the pretest writing sample and the posttest writing sample for both the control group and the experimental group.

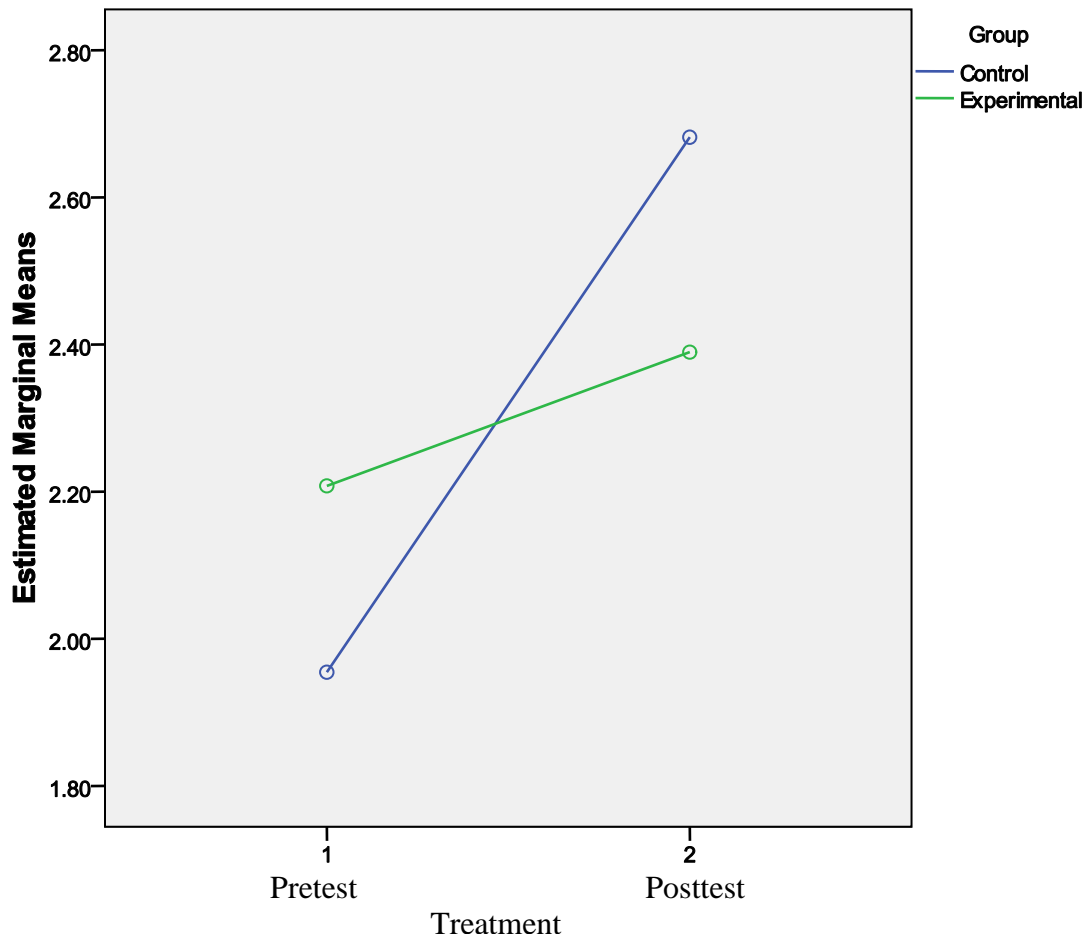


Figure 4.3. Pretest and Posttest for Reasoning. This figure illustrates the difference between the pretest writing sample and the posttest writing sample for both the control group and the experimental group.

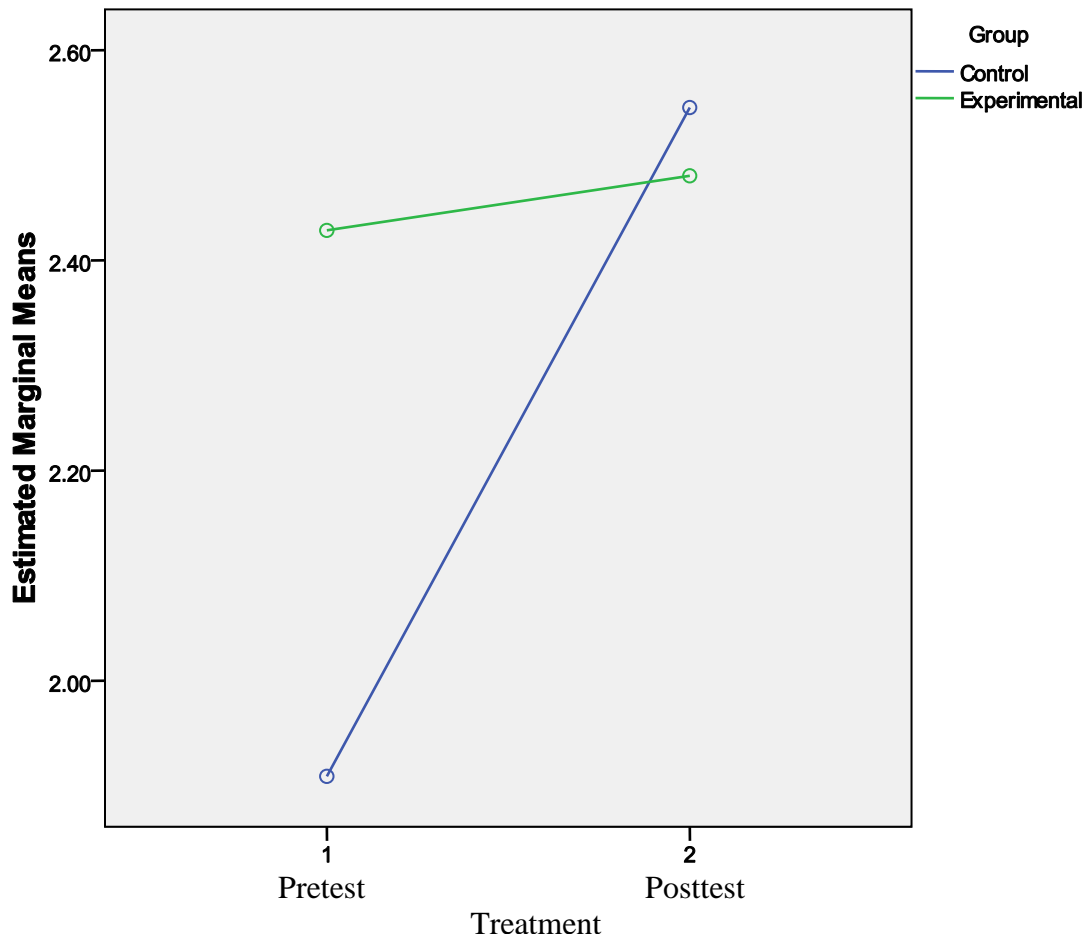


Figure 4.4. Pretest and Posttest Organizational Structure (Rubric #2). This figure illustrates the difference between the pretest writing sample and the posttest writing sample for both the control group and the experimental group.

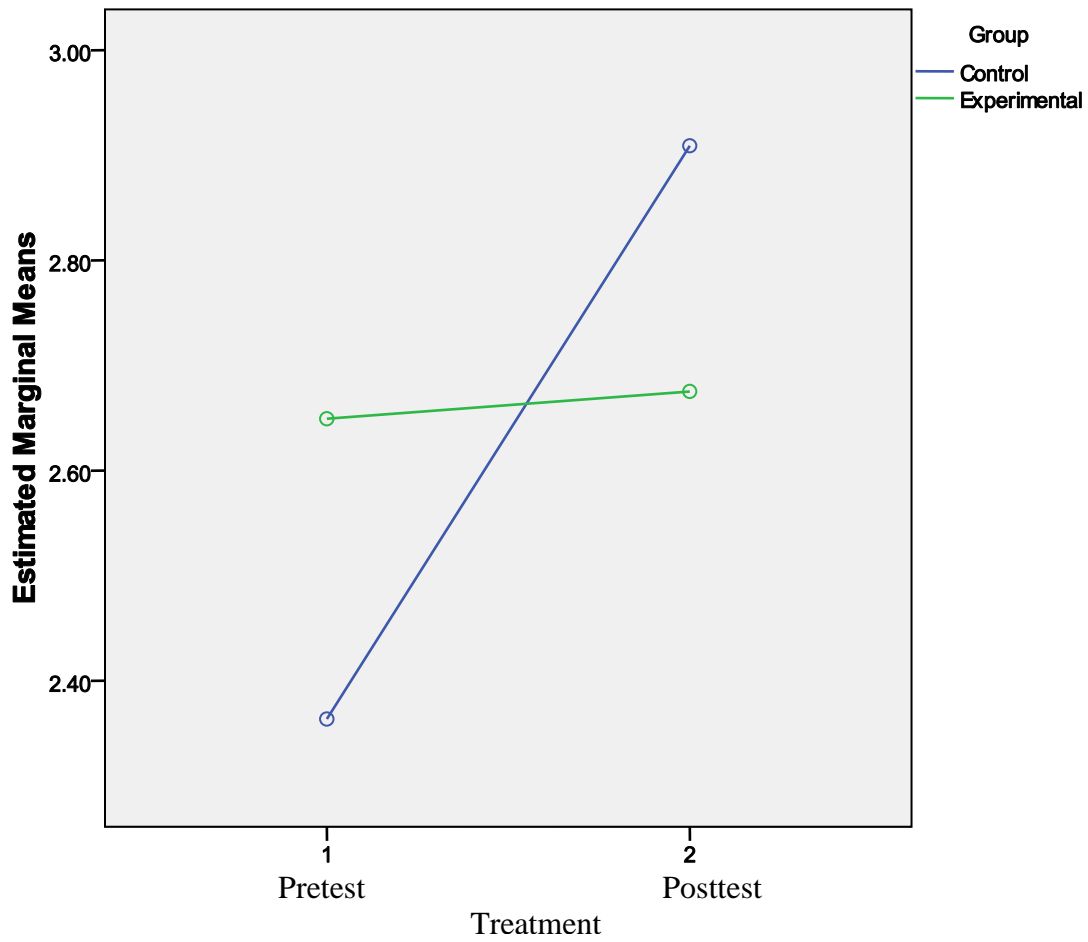


Figure 4.5. Pretest and Posttest Coherence Measure. This figure illustrates the difference between the pretest writing sample and the posttest writing sample for both the control group and the experimental group.

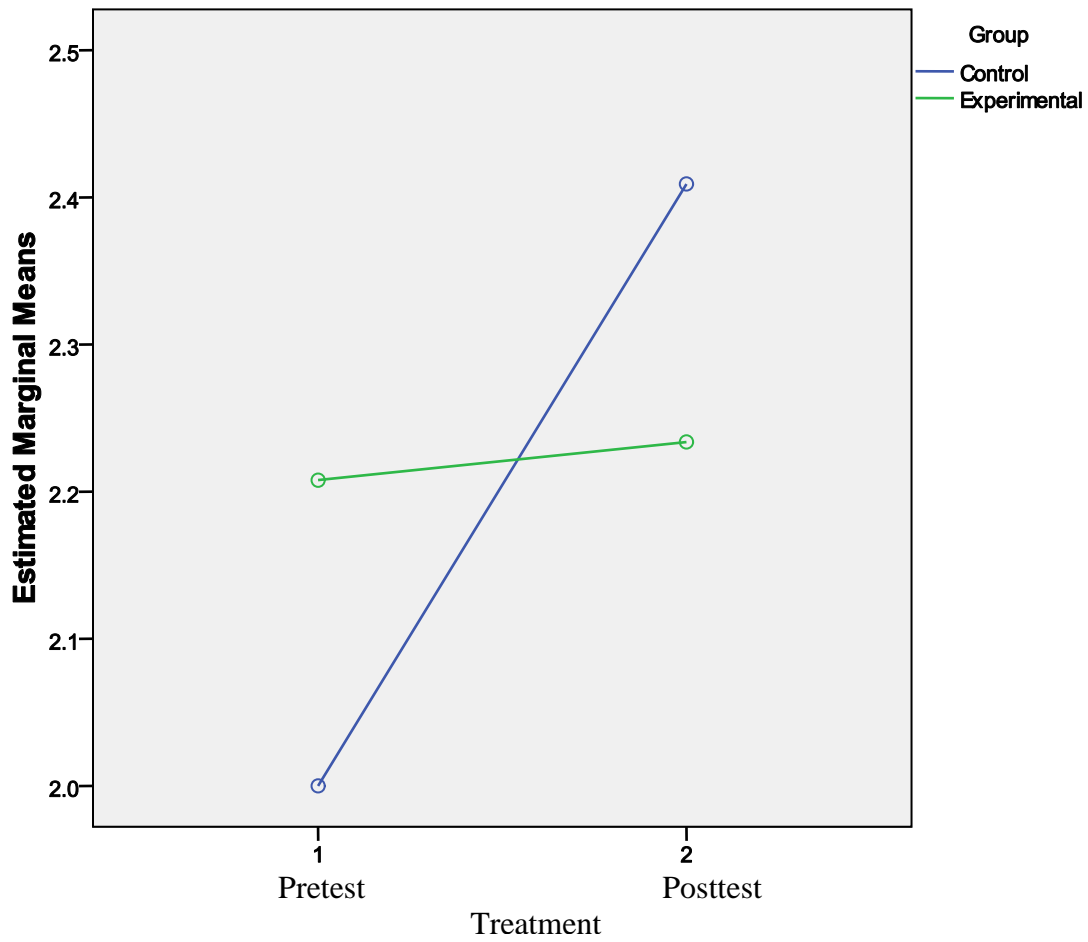


Figure 4.6. Pretest and Posttest Content. This figure illustrates the difference between the pretest writing sample and the posttest writing sample for both the control group and the experimental group.

The second null hypothesis was concerned with possible changes to the final essay scores between the two conditions (i.e., control and experimental). The results displayed in Table 4.2 indicate that there was no significant difference between the means and adjusted means, and no significant effect as measured by the analysis of covariance between the six pretest elements and the second essay mark. These findings support the null hypotheses. These results indicate that the investigator's null hypotheses can be accepted.

Covariant analysis of pretest measures to second essay scores. The analysis of the students' scores on the second required class essay submitted in the 11th week of the course consisted of a comparison between treatment groups with the scores being adjusted (covaried) by the six pretest scores from the elements in the previous analysis. The analysis is displayed in Table 4.2.

Table 4.2

Means and Adjusted Means and Analysis of Covariance^a between the Six PreTest Elements and the Second Essay Mark

	<i>M</i> (<i>SD</i>)	Adjusted Mean (<i>SEM</i>)	<i>F</i> (1,91) ^b	<i>p</i>
Control	66.38 (25.17)	66.49 (4.202)	1.448	.232
Experimental	72.31 (16.95)	72.27 (2.200)		

^aSecond essay mark was adjusted employing covariates from pretest writing samples

^b*df* was adjusted for covariate

The analysis indicated that there was no significant difference between the experimental and control groups on the adjusted second essay score. The analysis indicated that the relationship between the covariates and the dependent variable did not differ significantly as a function of the between subjects independent variable. These data are displayed in Figure 4.7.

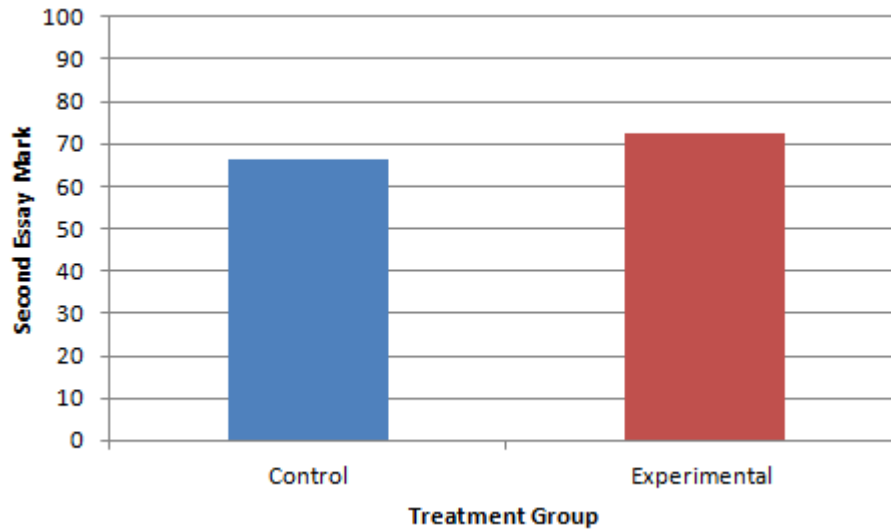


Figure 4.7 Adjusted Covariant Score for Second Essay

The third null hypothesis was concerned with possible differences in growth patterns in writing ability between the two conditions (i.e., control and experimental). The results displayed in Table 4.3 show the means and standard deviation and results of the *F*-tests. Both the control group and the experimental growth showed growth between the pretest and the posttest writing samples. These findings do not support the null hypotheses and, therefore, indicate that the investigator's null hypotheses should be rejected.

Analysis of composition elements.

Table 4.3

Time by Treatment Interaction

Measure	Control		Experimental		<i>F</i> (1,97)	<i>p</i>
	Pretest (<i>n</i> =22) <i>M</i> (<i>SD</i>)	Posttest (<i>n</i> =22) <i>M</i> (<i>SD</i>)	Pretest (<i>n</i> =77) <i>M</i> (<i>SD</i>)	Posttest (<i>n</i> =77) <i>M</i> (<i>SD</i>)		
Thesis/Focus (Rubric 1)	2.00 (.87)	2.95 (1.62)	2.25 (.76)	2.43 (.75)	8.662	.004
Organization (Rubric 1)	1.95 (.84)	2.59 (1.00)	2.25 (.78)	2.39 (.76)	5.082	.026
Reasoning (Rubric 1)	1.95 (.90)	2.68 (.95)	2.20 (.80)	2.39 (.76)	5.498	.021
Organization (Rubric 2)	1.90 (.75)	2.55 (.96)	2.43 (.89)	2.48 (.82)	5.851	.017
Coherence (Rubric 2)	2.36 (.79)	2.90 (.81)	2.65 (.76)	2.67 (.73)	5.787	.018
Content (Rubric 2)	2.00 (.87)	2.41 (1.01)	2.21 (.85)	2.23 (.87)	2.454	.120 (NS)

In Table 4.1, the data indicated that the control group outperformed the experimental group on all measures, except content, from the pretest to the posttest. Content, while not statistically significant, did approach significance ($p=.078$), following the same pattern as the previous measures. That is, the control group outperformed the experimental group from the pretest essay to the posttest essay.

There are many factors that could have accounted for the results:

- The control group may have had a preexisting familiarity with the process model of writing. That is, students in the control group were encouraged to write an academic essay following the traditional process model of writing (planning, generating, translating, and reviewing), a method that they may have already been exposed to in high school (see qualitative analysis).
- The control group began with substantially lower pretest scores. Students in the control group scored lower than the experimental group on all pretest measures. They had, however, a greater margin for improvement.
- The experimental group began with higher pretest scores. The experimental group scored higher than the control group on all of the pretest measures. The experimental group improved on all measures from the pretest to the posttest essay but, because they recorded higher scores on the pretest, their growth was, perhaps, not as considerable as that of the control group. The fact that the experimental group was already performing higher than the control group before the study may have resulted in a more limited range for improvement between the pretest and posttest writing samples;
- The teaching of the IDDL model may have been too abstract for students. The

students did not receive handouts of the model in either the lecture or the writing seminar. This might have led to students having problems in understanding the way in which the model was meant to be used. This was a deliberate act on my part as I was worried about cross-contamination between the groups;

- There may have been varying degrees of familiarity with the teaching of the IDDL model on the part of the TA's. One of the confounding variables that may have had an impact on the results was the teaching of the model by the teaching assistants. The teaching assistants were responsible for reinforcing the IDDL model in the writing seminar. It came to light after the fact that some of the teaching assistants were not as familiar with the model as I had supposed despite having had a two hour training session prior to the onset of the study and weekly updates throughout the study. It is difficult to determine the effect this might have had on the results;

- The course textbook might have, in retrospect, caused the experimental group some unexpected confusion. The same textbook was used by both the control group and the experimental group. The content of the textbook tended to reinforce the writing process that was being taught in the control group class. This effect may have been magnified by the fact that the method described in the textbook was more traditional and, thus, may have been more familiar to students already. This may have been particularly true of students who did not attend the mandatory seminars regularly and who relied on the textbook for their organizational strategies;

- There was an assumption at the beginning of the research that the groups were operating at similar levels. In the final analysis, it appeared that the groups were not as similar as first assumed.

Gender Differences

The fourth null hypothesis concerned gender differences and the patterns of writing ability growth for gender. This hypothesis was abandoned and analysis was not carried out because there were too few female participants in one of the groups, thereby rendering the measurements unreliable.

Summary of quantitative analysis. The analysis of the data indicated that the control group significantly ($p < .001$ to $p < .010$) outperformed the experimental group on all measures, except content ($p = .078$), between the pretest and posttest.

I had assumed that students would recognize the connection between the concepts discussed in the lectures and the writing tasks in which they were engaged in the writing seminars. The qualitative data from the study suggest that that was not the case. In the transcripts from the interviews, the students reported that they had not received writing instruction in the lecture. Curiously, however, many of those transcripts also contain references to the general principles of writing I had discussed in the lectures. In the discussion of the qualitative data below, I provide a fuller discussion of that apparent inconsistency.

Qualitative Analysis

Ten students from the control group and ten students from the experimental group were interviewed from those who had volunteered during the last week of November 2011. During the interview the students were asked to describe their respective decision-making strategies for text production at specific points in the writing process and to expand on their own experiences with writing in ARTS 1110. Students were prompted to comment on their respective processes for writing essays and to explain the reasons for the writing decisions they made. The qualitative data collection was undertaken using semi-structured interviews but the following statements are

representative of the statements used in the interviews:

- Tell me how you begin writing your essays in ARTS 1110.
- Tell me how you make decisions about organizing your essay.
- Tell me what strategies, if any, did you find to be helpful in completing your essay?
What strategies, if any, were not helpful?
- Do you feel more confident writing essays now that you have taken ARTS 1110?
Why, or why not?

Once the research assistant had transcribed the interviews, they were returned to each of the individual participants for member-checking to ensure accuracy before coding began. The research assistant was then trained by me in the method of recursive coding before she began coding the interviews. In order to verify the themes, the research assistant and I met to validate codes and derive relationships from the data. The themes identified had an inter-coder reliability of 89%. The analysis was intended to determine whether the teaching of the IDDL writing strategies had any influence on the development of composition strategies as perceived by the students.

Once the transcripts had been coded into themes, the following categorizations of the individual interview responses were identified under the primary research questions to offer a summary of key findings for this study. The analysis of each theme will be undertaken in the following manner: (a) the discussion of each theme will begin with a preface, which will include a discussion of the relevant literature, (b) the preface will be followed by the findings of this study, and (c) the discussion will conclude with a brief discussion of the ways in the findings of this study relate to the literature.

Students' perceptions of writing instruction. This section will provide a report on the responses of students to prompts concerning the following: (a) the types of writing instruction the students recognized themselves as having received, (b) the section of the course (i.e., the lecture or the accompanying writing seminar) in which they perceived the greatest part of writing instruction to have taken place; (c) the respective processes the students perceived themselves to follow in writing their essays; and, (d) the skills they perceived to be necessary for the writing of their own essays.

Students' perceptions of the types of writing instruction. Learning to write by following a step-by-step process such as the one that was used in both the control and the experimental sections of the ARTS 1110 (Introduction to University) course is an approach that has been supported by decades of research and one that has proven to be an effective method of teaching university students how to write an academic essay (Emig, 1971; Flower, 1989; Flower & Hayes, 1981; McCormick, 2006; Rohman & Wlecke, 1964; Zoellner, 1969). Zoellner (1969) was convinced that many of the difficulties students experience when learning to write were connected to instructors' failures to foreground the process of writing. He argued, therefore, that writing instructors should stress the process of writing and not just the final product. Flower (1989) also found that writing instruction would be more effective if students understood that writing required a series of hierarchically arranged, inter-related decisions to be made at distinct stages in the writing process. She further suggested that teaching the process theory of writing was effective because it allowed students to self-monitor those individual decisions to determine the effect that each had on the emerging text. McCormick (2006) stressed the importance of teaching writing as process but added that, in order to be effective, instruction must include an explicit teaching of the individual steps of writing.

The students in both the control group and the experimental group spoke about their perceptions of the step-by-step writing process. The comments were thematically similar in both groups with students reporting on the ways in which the process did, or did not, work for them individually. In the control group, 8 out of the 10, students interviewed said that going through the process was helpful. Gloria said, the “step-by-step instruction was really helpful cause you got to look into the smaller aspects of that [writing process], the details of that [process] for certain parts of the essay.” Similarly, Chad reported that he felt “for the most part, it is relatively beneficial, the whole process . . . I usually go step-by-step, like the outlines that we are taught to do are very comprehensive.” George also said that the step-by-step instruction “was helpful because in high school they never taught us how to make an outline or anything like that . . . the more structured outline helped a lot for me.” Sara found that the requirement to follow a process “helped [her] stay on schedule.” Harry reported that, not only did the writing process help when he was writing his essay, but it also helped stop writer’s block before it could get started. By contrast, Morgan found the writing process was “a little bit rushed. I think there were some things that could have been explained better.”

For the students who were in the experimental group, 4 out of 10 students found the step-by-step writing process helpful. Erin said, “I find it [step-by-step instruction] really helpful ‘cause I actually haven’t written an essay in so long before this year. So yeah, I found it really helpful” and she further observed that “in other courses they just say write an essay, but in this course . . . it’s like we will tell you how to do it.” Paula’s sentiments were similar. She said, “I like the [step-by-step] instruction, I like how they [the TAs] do the scope, and stance.” Donald found that the step-by-step instruction “was good for time-management, also for organizing your ideas, so you’re not just filling up a blank page . . . the instruction provided clear direction on

what needed to be done to satisfy the requirements for the essay.” Evan’s comments were similar. He reported that, “I did an overview this time [on the second essay] like I did a step by step, first paragraph, second paragraph, third paragraph, evidence, and conclusion, and that seemed to help me quite a bit.” Evan also reported that “It’s just kind of in the back of my head now, remember this, remember that.”

Two out of ten students in the control group, and six out of ten students in the experimental group, reported that they did not find all aspects of the step-by-step process helpful. While they said that they found certain aspects of the process useful, other aspects were either unclear or did not prove helpful in writing the final draft of the essay. Evan reported that “the [step-by-step] instruction was okay, the thesis part and everything kind of kept me on track [but] when we got to the later parts like the draft and stuff, I just felt like it didn’t really help me . . . as much as I thought it would.” Similarly, Milton reported that he “found the outline really helpful because it showed me there wasn’t enough evidence so at that point I knew I had to change sides” but “as for the rough draft, I did do it for the first one [first essay] but I really didn’t use the rough draft I submitted [when writing the final paper].” He also said,

I didn’t find it [the step-by-step instruction] helpful because I kind of let it [the essay] grow organically . . . rather than doing it incrementally and having the entire part of the essay done at one point, the entire part done at another point, rather than just letting those parts grow as it needed to, and as the inspiration came.

Spencer also found it:

harder going through the steps than just writing cause I mean we handed in our annotated bibliography before we hand in our draft, and I don't think like if I were just to go and write it in my own order, I would do the annotated bibliography last.

Summary: *Students' perceptions of the types of writing instruction.* When I was reading the transcripts for the first time, it soon became apparent that I could not determine the group to which any particular transcript belonged. In fact, the similarity of answers regarding the way in which the students reported that they had learned to write an argumentative essay was disconcerting. The models are very similar, with each emphasizing the importance of writing as a process, and each encouraging students to work through a series of stages (i.e., drafting a thesis statement, writing an outline, translating ideas into the essay format, monitoring and revising, and, finally, editing). In the qualitative interviews there was no mention made of the IDDL decision-making model in the interviews with the experimental group. Similarly, there was no mention made of the process writing model in the control group.

In both groups, students received explicit instruction in the planning of their essays using a process of outlining. In the control group, students were told to draft outlines detailing the points they intended to argue in their essays. Students were required to submit these outlines to their teaching assistant. In the experimental group, students were asked to use the IDDL model to draft outlines. The IDDL model uses embedded questions to prompt students to identify the individual component parts of their claims and to anticipate the evidence that would be needed to prove those claims. This reflected the principle difference between the two models. In the IDDL model, there was a greater emphasis on understanding the importance of decision-making in the writing process. It does not appear that the inclusion of the embedded questions resonated with

the students in the experimental group. I had expected that the students in the experimental group would discuss the IDDL model, not necessarily by name, but certainly with reference to the embedded questions that facilitated their writing process. That did not prove to be the case.

The students in the experimental group did not mention the IDDL model by name during the qualitative interviews. That fact may indicate that the name of the IDDL model was not important to them, that the name had not been emphasized in the writing seminars, that the model was not memorable, or that the model was not considered useful. The data from the interviews did not provide enough information to allow me to speculate with confidence on the reasons why the students did not discuss the IDDL model.

Students' perceptions on the teaching of writing. Because the argumentative essay has become the essay of choice for most instructors in a college/university setting, teaching first-year students to write an argumentative essay can be an important aspect of the first-year college/university curriculum (Bloom, 2006; Booth, 1963; Quilligan, 2006, Wingate, 2012). Quilligan (2006) suggested that teaching students how to construct an argumentative essay enables them to be able to understand the sort of writing that is required of them and the role that evidence plays in the essay. Without explicit instruction in the argumentative form, Higgins (1993) found that students simply list or display ideas instead of organizing source evidence around a claim. That is, students often fail to understand that they cannot simply insert quotes, facts, or data from sources without internalizing, explaining, and contextualizing the evidence. Higgins reported that college/university level writing instruction does not emphasize these skills but instead focuses on the written product.

The qualitative interviews with both the control group and the experimental group revealed that students did not perceive that they had received any writing instruction in the

lecture. In both groups, the students reported that the only writing instruction they received took place in the writing seminars. When students were asked in interviews where they received instruction in writing strategies for their essays, 8 out of 10 students in the control group stated that they had received their writing instruction from their teaching assistants, while all students in the experimental group reported that they received their writing instruction from the teaching assistants. None of the students in either the control group or the experimental group reported that I had discussed writing strategies in the lectures, and none reported that my lectures included references to either the standard outline model or the new IDDL writing model.

Students in the control group made the following comments regarding their perceptions of the writing instruction they received in ARTS 1110. Gloria reported that the “writing instruction came from the teaching assistants. The instructor in the lecture talked more about . . . learning and memory. . . . He touched on it [writing instruction] when he explained writing but nothing specific. That was all done by the TAs.” Similarly, Sabrina did not recall being taught writing strategies in the lecture. She said that she did not “think there [was] much connection about how to write from the lectures. All the writing instruction has come from the TAs.” Kyle’s experience was the same. He reported that he “couldn’t apply anything as far as the essay goes [from the lecture]. It was more my TA, more in the lab, that I learned a lot more [about writing].”

Students in the experimental group made similar comments about their perceptions of how writing was taught in ARTS 1110, largely reporting that they did not receive a great deal of writing instruction in the lecture. Paula said that:

He [the instructor] did talk about how to write an essay but we learn more about that in detail in our [writing] lab. We mostly keep the writing instruction in the lab. The lecture

is more how to rate ourselves as to what types of learners we are, different types of learners, and how it can benefit you, note-taking, how to organize notes, I found that really helpful.

Scott said that “in the lecture, I didn’t really find it useful in one way or another in terms of writing instruction.” Donald’s view was that the “TAs taught us. They outlined it [the writing process] really well: how to do the introduction, thesis statement, your body paragraphs, the conclusions, and your counter-arguments.” Donald also found, however, that the writing instruction was not explicit enough to be useful: “it was not as good as it could have been . . . it was kind of too vague and I just felt like it didn’t, like I just kept having questions.” Similarly, Crystal felt that “I found it [writing instruction] hard cause sometimes they didn’t explain it well . . . I found they explain on some things they thought was hard, but they didn’t elaborate on the other things that maybe were hard for other people.” Like the other students in the study, she reported that her instructor did not go over writing strategies in the lecture but rather “kind of pushed it on the TAs . . . He just said the TAs will be going over this . . . I didn’t find that I got much help from him [the instructor].”

Summary: Students’ perceptions on the teaching of writing. In interviews with students from both the control class and the experimental class, it was the students’ perceptions that I did not provide writing instruction in the lecture portion of the class. This result was unexpected since I had explicitly taught the writing process model in the control group and the IDDL model in the experimental group. The students in both classes reported that all of the writing instruction in the course was provided by the teaching assistants in the writing seminars. The only explanation I can offer is that the students did not perceive the instruction I was providing in the lecture was related to the writing assignments they were completing in their writing

seminars. As I mention in the discussion of implications (chapter 5), the structure of the course might have played a part in this result. Because the students attend the lecture once a week with me, and attend the writing seminar once a week with the teaching assistants, the instruction in the lecture regarding writing strategies may have been too de-contextualized to be useful to the students when they were working on their writing assignments.

Students' perceptions of how they write an essay. Kellogg (1987) found that college/university students only spend one quarter of their writing time planning what they are going to say and how they are going to say it. McCutchen (1988) observed that college/university students tend to plan as they write using a process of invention by free association: they write down everything they can remember about a subject, independent of any individual idea's potential relevance, and then they use those ideas to stimulate the generation of new ideas. This lack of planning is, perhaps, linked to the time that college/university students spend on writing their essays. Beaufort (2006) found that college students would benefit from following a process model of writing but, due either to their course-load or to bad planning, they often do not have the time. Consequently, they often leave their writing assignments to a day or two before the assignments are due, a point at which the process model of writing is no longer a viable option. In answer to this challenge, Troia and Graham (2002) have suggested that instructors "directly teach these students planning strategies that can be used during or in advance of writing . . . this approach has been quite successful, as explicit instruction in planning strategies has resulted in improved writing performance for students" (p. 290).

In the interviews for this study, students were asked to talk about the ways in which they began to write their essays for ARTS 1110. Again, the control and the experimental groups did not differ markedly in their discussion of the processes they followed in the planning stages of

the writing process. In the control group, 3 out of 10 students said that they began writing their essays by making an outline, 3 out of 10 began with research, 2 out of 10 started with their thesis statement, and one student said that he did not follow an outline at all but rather just jotted down ideas in a vague manner.

In the experimental group, 4 out of 10 students who were interviewed said that they began by drafting an outline, 4 out of 10 began with research first, one began with a thesis statement, and one student reported that she began with a statement of opinion first and then sought references that would support her opinion. Only then did she write an outline.

The following quotations are representative of the types of comments that were given by students in the control group. Sabrina said that she starts with an outline: "I always have an outline to help me guide my paragraphs and stuff . . . [Then] I start my thesis statement, and I usually do evidence at the end." Sean said that he starts "with a general statement usually, just get some principle points. [Then], before I start writing, I make an outline or else it's not going to work." Chad said "I find the research first, and then I have my outline afterwards, and then I would just get the research that fits the outline." Morgan said that he likes to start with the research first: "I start with researching until I find exactly what I am looking for or something to kind of get inspiration and creativity going. Then I try to type out the introduction with the thesis." Sara said, "I start with an outline. I kind of make a rough thesis. It's not the one I am going to stick to but it's a rough one." For Jackie, the process is very straightforward, "the thesis statement first, then research, then outline, then writing."

The students in the experimental group made similar comments to the students in the control group. James said, "I would normally start with creating an outline, and then the opening paragraph." Erin also starts with an outline: "I do an outline, and then I go and find resources,

and then followed along my paragraphs with whatever it said in the resources that we were given. . . . Then do basically each paragraph, then my conclusion, and then my intro.” Scott also starts with an outline first: “I use an outline first, then I do the research, and then I start writing the essay.” Donald prefers to start “with a thesis statement. It’s like the stance that you want to take in the argument, the scope, the points you want to cover, the significance of why it’s important . . . Then comes the research, the outline.” Evan likes to start with the research, as does Milton. Milton reported that “I begin by researching articles, and reading them, and just kind of getting a general feel of what the general consensus is in the field, or what evidence there is to support it . . . I would say that 90% of my time is spent gathering evidence and 10% writing.”

Summary: Students’ perceptions of how they write an essay. The data in this study indicated that there is no single method that all students followed when beginning to write their essays. Because all students in ARTS 1110 were required to submit a thesis statement before they began writing their essay, it seemed reasonable to suppose that all of the students interviewed would have reported that they began with a thesis statement. It is, therefore, worth noting that only two students in the control group and one student in the experimental group reported that they began by writing a thesis statement first.

Perceived skills needed to write an essay in ARTS 1110. The students perceived two skills as being particularly important to their success in writing assignments in the Introduction to University course. The first was a research strategy for searching out references and evidence to support their arguments, and the second was a working knowledge of the APA formatting style: 4 out of 10 students in both the control group and the experimental group mentioned that, when writing academic essays, they felt it was important to learn how to reference. Interestingly,

according to the reports of the students, this emphasis on format was more important than the emphasis on essay structure or the development of ideas. It should be noted, however, that many of the features that the students ascribe to APA (e.g., the need for evidence, the need for coherence, the expectation of a certain degree of objectivity) are features that attach to formal academic writing in general, rather than being features that attach to the APA formatting protocols. Five out of ten students in the control group and six out of ten students in the experimental group said that learning how to properly format their papers was a skill they had acquired in the course and something they found extremely useful.

The following statements from students in the control group are representative of the sentiments expressed by the group. Sean said, “You can’t just say something is connected to the other. You have to link it. You have to say how something correlates to this, or this must be true because Just supporting your point.” Chad found that “you’re writing with research and evidence, and such so you have less of a personal voice inside the essay. In high school, it was all about what you think about what you read.” Morgan said, “I had trouble with the research . . . I didn’t get the sources down . . . I tried to connect the sources, but I couldn’t connect them, and so then the whole paper kind of turned rather incoherent.” He went on to say:

the whole referencing thing [was confusing], like they tried to kind of explain how to connect the two but I still couldn’t get that full idea down of being able to take a reference and kind of fitting it into the paper or how to take a reference and take pieces out of that reference and make that work with the paper, and how to tell what you actually need and don’t need.

Likewise, Kyle said:

it's hard to actually do the research and find motivation to do things, but I find once you have the points and the research, it just kinds of flows, and you have the proof. You don't have to make the proof. You just use the proof, and interpret it for the people.

The students in the experimental group expressed similar sentiments about the research process. James said "I have trouble finding sources, or knowing where to look for sources." Erin found that "the writing instruction in ARTS 1110 is very useful, especially the scholarly sources. Before, if I needed a source, I would just go Google it and I didn't know if that was legit, but now I know how to do that." Scott talked about the experience of learning to reference in the writing seminar, noting that he wished he had gotten more information on the research process:

The TA went through how to find resources on the internet but it was more the technical way. Like how you could write and use the computer to get there, not really like how to find how good that research was.

Donald said "I find collecting research somewhat difficult at the beginning stages, but it's a good process the TAs teach us, to take us from just a single sentence to your final product."

As noted above, it was the perception of 5 out of 10 students in the control group and 6 out of 10 students in the experimental group that learning to format in APA was very important. The following quotations are characteristic of the sentiments expressed by members of the control group. Sabrina said, "In the labs we learned APA and how to write like a proper APA style paper . . . How you should properly cite, how APA helps you write the paper the way you want it." George also found that he "got help from the TAs mainly with the formatting of it [the essay], and the certain rules we have to watch for in APA formatting." Sara found the

acquisition of knowledge of APA useful, saying that “we never did any formatting in high school . . . we’re doing APA now, so she’s [the TA] helped with referencing.” Harry also mentioned that “in ARTS 1110, you have to use APA citation, and that’s a very, very new thing for a lot of students, students like me that was very, very handy.” He went on to say:

Like, I found APA a bit of a stumbling block when I first came across it, [be]cause usually I am used to just banging out a paper, and it doesn’t matter if there is no overall structure with it. That’s what I was used to doing before. Writing in APA, in some form of a system requires you to have a lot more discipline while writing your paper . . . I have a stronger sense of discipline in my writing [now that I know APA formatting].

Students in the experimental group made similar comments about the importance of learning to use the APA format. James said, “I didn’t really go for help with my essays. I just asked questions in the lab if I had anything. It was mostly to do with the APA formatting.” Scott said that “this class helped with the formatting part, the APA style, not the actual writing part even though I feel the course is more technical.” Milton also found that “the TAs teach you how to use APA format, ‘ cause there are a lot of different formats so it was very good to actually get real format instruction in exactly what you need in a formal format.” Spencer found that the instruction he received in the lab section was helpful because “I actually didn’t know APA formatting because we really didn’t learn that in high school.” Crystal also said “[the TAs] did APA formatting, but that’s just basically like the cover page and this and that . . . they never really did give specific instruction on how to structure your essay.”

Summary: Perceived skills needed to write an essay in ARTS 1110. Students in both groups expressed frustration with not understanding the research process for their essays. It was an area in which they were not confident because they perceived that they had not been taught to

do research in high school. The papers they were expected to produce in high school were generally opinion papers. They also reported that, even after having completed their research, they did not understand the way in which they were meant to incorporate the evidence into their papers. In addition, they reported that learning to properly format their papers caused them some degree of difficulty.

Students' perceptions using the five paragraph essay. Applebee (1984) found that the teaching model that most dominated high school writing instruction was the five-paragraph model. He suggested that structured models, like the five-paragraph essay, instruct students in the shape of the product and provide them with a sense of direction. This instruction does not, however, provide explicit instruction in procedure and often does little to affect student understanding of the purpose of writing. Dean (2000), Wesley (2000), and Wiley (2000) all found that most writing instruction in junior high and high schools tended to be formulaic (which is, in effect, the objection that is often made to the use of the five-paragraph essay). Dean (2000), whose research supported Applebee's (1984) finding of the prevalence of the five paragraph model in high school classrooms around the United States, suggested that students like the model both because it is safe and because it seems to require little in the way of critical judgment.

In this study, 5 out of 10 students in the control group indicated they resorted to using the five-paragraph model to write their essays in ARTS 1110 because it was familiar. Only 2 out of 10 students in the experimental group said they used the five-paragraph model. The findings in the control group are, perhaps, less surprising than those of the experimental group given the tendency that students have to return to familiar strategies when they encounter difficulties in the writing of their essays (Dean, 2000). Because most students have been conditioned since junior high school to write using the five-paragraph essay model (Dean, 2000), it is not entirely

surprising that they would attempt to employ it in unfamiliar writing situations.

While the five-paragraph essay was not a topic of discussion in the control group or the experimental group, some students commented on their experiences with the five-paragraph essay when discussing the way in which they learned to write essays in ARTS 1110. Five out of ten students in the control group talked about their essay-writing experiences using the five-paragraph model they had learned in high school. Gloria said that, “when I wrote essays in high school, it was more basic. Write your introduction, three basic paragraphs and the conclusion.” Sabrina also reported that “I followed the format of writing through what I learned in high school.” Similarly, Sean said, “When learning how to write an essay in ARTS 1110, I’m like, okay, that’s like three good body paragraphs, introduction, and conclusion.” Chad also reported that he “[starts] with an outline because that’s how we’ve been trained in high school. We were taught how to make an outline first, then do the research. For the most part it was a five-paragraph essay.” Morgan said that he did not notice the difference between essay-writing in high school and essay-writing in first-year university: “The high school teacher I had was really good. He taught us basically, similar to what we have here.”

Only 2 out of 10 students in the experimental group mentioned that they used the organizational writing strategy they had learned in high school. Two of the students who made that kind of observation were Donald and Scott. Donald said, “I kept the essay in the five-paragraph format. Yeah, it’s kind of difficult to get away from, usually just basically put a five-paragraph essay and then put in a counter-argument in as well.” Scott said that he reverted back to what he knew, the five-paragraph essay, because:

for the first essay [in ARTS 1110], we didn’t get that much instruction to be honest so I used what I knew from high school, and then I used what I found on the internet . . . For

the body of the essay, I looked at how I did it in high school basically, and they also emphasized how to do it in high school, which is like the three paragraphs, which is the five-paragraph essay which seems to be the same as the high school, but it [the essay in ARTS 1110] should be more than five paragraphs so it could explain the topic more clear.

Summary: Students' perceptions using the five paragraph essay. The prior knowledge that students bring to university from high school appears to be a powerful indicator of the strategy to which they will default when completing assignments. Applebee (1984) observed that the five-paragraph model was used almost exclusively in high school to teach students how to write an essay. This might explain why half of the students in the control group reported that they used the five-paragraph model when composing their essays. There were fewer students from the experimental class (only two out of ten) that reported they used the five-paragraph essay model when composing their essays. The writing instruction students received in class did not include instruction in the five-paragraph model so it is worth noting that the students reported defaulting to that model even when they were presented with a different model to use.

Students' perceptions of the types of feedback received on essays. The use of feedback is recognized as a necessary part of the process approach to writing. It provides writers with the information they need to determine the degree to which they have been successful in conveying their intended meaning to the reader (Arndt, 1993; Keh, 1990). Because, as Arndt (1993) has suggested, "writing is seen as an interactive social process or construction of meaning between writer and reader" (p. 90), therefore the feedback that is given "makes a central and critical contribution to the evolution of a piece of writing" (p. 91). External feedback facilitates a writer's monitoring of the effect of his or her text. It is, as Keh (1990) has observed, the input

from a reader to a writer that assists the writer to refine an essay through a process of revision. It is the feedback that informs a writer's decision-making during the process of the revision process that Chaudron (1984) identified as critical. This is the stage at which students can use the feedback they receive to review their work productively (Arndt, 1993). Flower (1979) suggested that it is the feedback from a reader that allows a writer to produce reader-based prose as opposed to writer-based prose. In educational settings, the types of feedback that prove the most useful are comments that are characterized as student-centred rather than teacher-centred (Keh, 1990). Keh (1990) hypothesized that it is through the process of feedback that a writer "learns where he or she has misled or confused the reader by not supplying enough information, illogical organization, lack of development of ideas, or something like inappropriate word choice or tense" (p. 295).

Ashwell (2000) differentiated between content feedback and form feedback. He defined content feedback as feedback that helps students through the cycle of revision by focusing on the meaning-level issues and form feedback as focusing on the mechanics of writing. He believes that keeping content feedback and format feedback separate as students navigate the revision process will be less confusing for them in terms of letting them know what they should attend to at any particular stage of the process. Ashwell further says that content feedback will lead to long-term improvement in essay writing while format feedback has a short-term effect.

In ARTS 1110, all of the feedback on students' essays is provided by the teaching assistants. The teaching assistants give detailed feedback based on a marking rubric that identifies two broad categories: *content* which is marked out of 70% and *grammar and composition* which is marked out of 30%. The content category is divided into the following sub-categories: (a) introduction and thesis; (b) resources/research; (c) format (APA); (d) reasoning;

(e) organization and clarity; and (f) conclusion. I oversee the grading of all essays to ensure the marking is consistent across teaching assistants. I also read the feedback that is presented on the essays to ensure that the students have enough direction to be able to re-write their essays based on the teaching assistants' feedback.

Students in both the control and the experimental groups were asked to talk about the type of feedback they received on their essays from the teaching assistants. One of the students in the control group and one of the students in the experimental group said that the comments they received were very general. Sabrina, from the control group, said:

I don't think we got much feedback. Like, when we handed in our rough drafts, we didn't get much feedback. She [the TA] just talked about more how we can improve and what not. There were no specific things to improve, more general stuff.

Crystal, who was in the experimental group, had a similar experience. She said:

They don't give us a lot of information. Today, she talked about common mistakes made but she didn't really elaborate again. It was mainly you have to watch this and watch that, but she didn't elaborate like why or give us an example. So, she didn't really tell us how we could improve.

However, some of the students reported that the comments they received from the TAs were specific. Three out of ten students from the control group said that the comments they received were specific to their papers. Sean said he received comments such as "this is unnecessary . . . or what does this connect to, or can you explain this." Morgan also said "it was basically like too short, and not explained it enough . . . and I have a problem with awkward sentences." Kyle said "The TA said I had a strong intro . . . but it was a little repetitive, like it

could be refined . . . and she pointed out where I needed sources, or where I needed citations.” Sara talked about getting feedback on “organization. That was the biggest thing.”

Four out of ten students from the experimental group said the types of comments they received on their essays were specific to their own essays. Donald felt that “the feedback provided really good direction on what the teachers are looking for, what you can do to actually get started; it’s really good for that.” Evan said “the TA said it wasn’t worded properly. I could have done a better job of ordering it, so I did that on my re-write. I re-ordered it.” Milton found that “everything was pretty good. I did quite well on it. The only thing I missed really was transition sentences and she did put that in there.”

Feedback that was related to the process the students identified as formatting was mentioned by 2 out of 10 students in the control group and 4 out of 10 students in the experimental group. Again, it should be noted that the processes the students identify as ‘formatting’ appears, in some cases, to involve revising for meaning or correcting for unsubstantiated claims. Chad said that his comments related to “editing and revising, the polishing touches.” Harry said that the comments he got were “the usual grammar issues and stuff, but also if I made a statement I wouldn’t back that up, and she told me how to back that up . . . [she said] to please cite it [the source] correctly.” Erin, from the experimental group, said “when I got back the first essay, everything was written on my essay that I needed to improve like my annotated bibliography, formatting, stuff like ‘this sentence should be after this certain sentence’, and stuff like that. So formatting basically.” Scott found that “basically, the most comments were about APA formatting.” Similarly, Donald reported “most of the essay went really well, so it was basically grammar mistakes and conjunctions, and stuff like that.” Spencer found that:

the comments and stuff were really good. It wasn't just that was wrong, you need to re-write this. It was like, instead, you could insert a citation here, you could develop this idea. It's a lot of formatting, and I guess citations, I didn't even know citations [before starting this course].”

The results of this study show that the students interpreted the types of feedback they received to be concerned primarily with surface aspects of their essays (e.g., proper format or grammatical/standard usage issues). Keh (1990) called these types of comments “lower order concerns” (p. 303). She contrasted the lower order comments with “higher order concerns” (p. 303) which focused more on the ways in which writers develop ideas, organize content, and maintain a unified focus. However, some of the comments the students made suggested that they understood the meaning of the feedback they received in a different way than the teaching assistants may have intended. As Ashwell (2000) has suggested, students often do not understand the way in which feedback is intended to affect their writing, and they may not be able to interpret the feedback in a way that the teacher had meant. Ashwell found that certain patterns of feedback might not be compatible with the students' own intuitions regarding the most significant areas of concern at different stages in the revision process.

Summary: Students' perceptions of the types of feedback received on essays. Students' perceptions of the types of feedback they received appeared to be dependent on the individual teaching assistants. Some students in both groups reported receiving very general feedback while others reported that they got very specific feedback on their essays. There was no consensus among the students or among the groups. In addition, students in both groups seemed to pay an inordinate amount of attention to ensuring their papers were properly formatted in APA style.

Students' perceptions of asking for assistance. The way that students perceive themselves as learners affects the degree to which they are willing to seek assistance in the classroom (Ryan, Gheen, & Midgley, 1998). Students who have low self-esteem are more likely to believe that others will think they lack ability because they need support, and therefore, they are less likely to seek the help they need (Ryan et al., 1988). Ryan, Gheen, and Midgley (1998) observed that students with high self-esteem worry less about the way in which they will be perceived by others and thus are more likely to ask their instructors for the help they need. The authors further suggest that the students who are having troubles with the course material are the ones who are least likely to ask for assistance. Karabenick and Knapp (1988) found that students whose marks were at the lower range of academic performance (B- to C+) were the students who were the least likely to ask for help from their instructors or their peers. The authors went on to say that a repeated lack of success was likely one of the reasons why the students were reluctant to seek support from their instructors. This was perhaps due to their expectations of future failure and their negative emotions such as sadness, guilt, embarrassment, hopelessness, and resignation.

Three out of ten students in each group reported that they had gone to their teaching assistants for help. Sabrina said "They're [the TAs] really helpful when you need help. They will definitely make the time for you." Harry also found that "she [the TA] helped me with the writing mechanics to make sure my APA citations were correct. She took a look at my thesis statement and she also took a look at my outline." However, Morgan said, "I did not go to the TA for help. I have a bad habit of doing that. I have never really gone to TAs for assistance. I've always just tried to kind of do things on my own." Morgan also reported, however, that "They

[the TAs] explain it. It's, like, in the labs, they're explaining it and I mean it makes sense in the classroom. But, when I go to write the essay, it's like what was I doing.”

One of the students in the experimental group, Scott said:

For writing essays, I went to see my TA two times actually. It was after the rewrite and one of them was a week before the essay was due, and I asked multiple APA questions . . . I asked her about the thesis statement. She read it over. She helped me with that, and it was really helpful.

Crystal found that she had trouble going to ask the TA for help, because “I don't know how to ask in a way where I'll understand what to do next time. I just know what to do with this one. I don't know what to do next time.” She also said that she might have found an appointment with the teaching assistant more useful if “they would elaborate more, explain more. We're new. We don't know what we're doing. Yeah, I think, it's like they expect, they give us handouts and expect us to understand.” James also said, “I went to see my TA about how to do research but it wasn't really helpful.”

Summary: Students' perceptions of asking for assistance. The results from this study are consistent with the literature. Some students reported that they were reluctant to ask for help even when they knew it was needed. It was interesting to note that none of the students reported that they had sought assistance from me, despite their awareness of my availability during regular office hours. This result might be explained by the students' perception that writing instruction was the responsibility of the teaching assistants. They may have gone to the teaching assistants for writing assistance because it was their perception that the teaching assistants were the ones who taught them how to write an essay.

Students' perceptions of the types of instruction in the lecture. Students were asked to comment on the kinds of topics they perceived to have been discussed in the lecture portion of the class. More specifically, they were asked for their perceptions of the kinds of things they had learned about writing in the lecture classes.

In the control group, students reported that the instruction they received in the lecture concerned the general process of adapting to learning in a university setting. Chad said that “the lecture was definitely beneficial for the transition to university. When I first entered university, I was super overwhelmed . . . I actually did try to apply what I learned in ARTS 1110 to all my other courses.” Morgan’s comments were echoed by many of other students. He said, “I find the lectures actually the most useful. Explaining the logical fallacies, and explaining how the different arguments work, and how you can have evidence work.” Morgan also reported that:

I like the lectures a lot actually. He [the instructor] talks about how to think about writing an essay, how to get your mind into the right mindset, what to think about when you’re writing the essay. Things to think about and things to look back upon and reflect, and things like that.

Similarly, Chad spoke about the benefits of the lecture: “he [the instructor] would just give us some really beneficial tips like, don’t focus on the 1500 words. Focus on strengthening your argument. It’s more than just grammar and spelling.” Kyle said “I had meetings for the first little bit of the year [with the instructor] . . . He kind of helped me pick up the university way of doing things, like how to read the textbooks, and that sort of thing.” George said that “he [the instructor] had a really good part on tests, of the different kinds of tests, and taking the different kinds of tests, and the methods you should take towards them . . . I learned a lot about memory.”

He also reported that “in the lecture part, we learn a lot about learning, how to learn, and I feel it helps me more in other courses, not in this course.”

Four out of ten students in the control group said that the instructor talked about the essay-writing process in general terms. Sara said:

He makes it clear what he wants. He points out you have to have an argument, and reasons that are logical to lead to your conclusion and he went through all that so that was really helpful . . . He also taught us to check what you are writing about, like if you’re not being clear, if you’re using the same word twice with different meanings, you know that kind of thing so it was really helpful.

Sara also reported that “he’s been very helpful. Like he’s gone over just like simple things that you wouldn’t really think about when you’re writing an essay. Like fallacies. Like things you wouldn’t think about on your own. Like generalizations.”

Jackie, however, said that “in the lecture we don’t talk directly about writing, but we talk about fallacies and like about things not to do, and we talk about metacognition . . . so it wasn’t like very writing oriented, more like memory and stuff.”

Harry found that:

In class lectures he [course instructor] mainly dealt with issues that students usually come across when they write their essays. Like I said, first person language, that sort of stuff, hanging statements with nothing to back it up. He didn’t exactly deal with the process of writing. He didn’t exactly go in depth into that. That was up to the lab instructor.

In the experimental class, 8 out of 10 students said that the type of instruction they were getting in the lecture was mostly about how to learn. James said:

in the lectures, I guess, not really did I learn how to write an essay. Most of the things that I took away from the lectures was how to study in different courses. Like what I should do. How to retain information better and hopefully hold it so that I would be more prepared for final exams.

Erin made a similar point: “In the lecture we didn’t learn how to write an essay. We learned different things. Like taking notes, and how to memorize things better, and how to understand things better, and how to learn better.” Paula said that “one of the things I found really helpful is we went over the types of learning that will help you. The learning styles. I found that really helpful. That I refer to all the time now. I use it in all my classes.”

Scott said that “in the lecture it was basically about the learning psychology if I could characterize it like that.” He went on to say that “in the lecture, we mostly learned about how to study, and how to learn to be like a first-year student . . . It was more of how to deal with stress, how to deal with exams, basically how to study.”

Similarly, Donald said:

the ones in the lecture, they are less about the general topic of writing and more I guess broad than that. It’s more just how to learn essentially . . . It was mostly about the different processes of learning and steps that you can take to enhance your success at university. The lecture stuff is more, it’s not just for writing essays. You can apply the knowledge you get to even like a math-related course because he [the instructor] does go over like how to approach math-related courses. He talks about objective tests or essay tests . . . and learning how to learn.

Evan found that “the lectures definitely helped me look on with what you should expect when going to class. It’s not just here’s the information, reiterate it. It’s here’s the outline, figure it out

for yourself.” Milton reported that he did not learn about the fundamental aspects of writing in the lecture, what he called “dotting the i’s and crossing the t’s.” What he learned, instead, was “write with meaning, or aim for meaning first and then try and make it fit into a particular format.” Milton found that the type of instruction he received was particularly helpful because “I found before I would always try to fit it into the format rather than actually trying to say something meaningful. So that was just really, really useful.” Similarly, Spencer found that “he [the instructor] is teaching us more about learning, like how to learn. What he has taught us is actually really useful in understanding how to write. He talks more about the mental aspects of learning.” Crystal, however, said “he [the instructor] mainly talked about learning techniques, studying techniques, but not really about writing an essay kind of thing. That was more in the lab with the TA.”

Summary: Students’ perceptions of the types of instruction in the lecture. As has been previously noted, the students in both the control group and the experimental group did not perceive that I taught them to write an essay in the lecture. They reported that, in the lecture, they were taught general principles of learning and reasoning across curriculum. Many students reported that these “tips” were very beneficial in assisting them to make the transition to university.

Transference of knowledge from ARTS 1110 to other courses. Though not a traditional composition course, the ARTS 1110 course that was used for this study does provide explicit instruction in the process of writing. That is, like most composition courses, it emphasizes writing process and has the “development of writing ability and metacognitive awareness . . . [as] the primary objectives” (David, Gordon, & Pollard, 1995, p. 525). Like

composition courses, time is dedicated to writing *as* a subject. The course differs, however, from composition courses in that students are also being asked to write *about* a subject.

The students in this study were prompted to comment on the possibility that the skills they acquired in ARTS 1110 might be transferred to other courses. Often, they reported that they had been able to transfer general knowledge to other courses, but only a few students spoke of their ability to transfer the writing strategies they had learned. Even these students reported limited success. This finding was consistent in both the control group and the experimental group. In many cases, however, students were not taking any other courses in which there was a significant writing component. Under the circumstances, the question of transferability of writing skills was not germane. On the other hand, because the general learning strategies they were taught could be directly applied in other courses, those strategies seemed to have had greater transferability. As Perkins and Salomon (1988) found, teaching for transfer is more effective when there is explicit instruction in the more general principles behind particular skills or knowledge. This might explain why students in both the control group and the experimental group reported greater success in the transference of the general skills they learned in ARTS 1110 (i.e., learning strategies, study strategies, and note-taking skills). Nelms and Dively (2007) suggest that students are able to transfer general knowledge more easily because they are able to recognize similarities in the content areas more easily than they recognize similarities in different writing situations.

Students from both the control group and the experimental group were asked if they had learned anything in ARTS 1110 that could be transferred to their other courses. Four out of ten students in the control group and 6 out of 10 students in the experimental group made mention of the types of things that they learned in the course that they were able to transfer to other courses.

The following comments come from students in the control group who spoke about their ability to transfer knowledge. Sean said:

I wrote a history paper but ARTS 1110 didn't really help me because it is a different format, and way different information, and it was more of not presenting an argument, but just analyzing an event instead which you have to write completely differently so it wasn't that beneficial for that.

On the other hand, George said "I've already used the test stuff [in other courses] and just little things like that, and if I ever have to write an essay again, obviously it will be very helpful."

Sara found that she could also use some of the strategies she learned in ARTS 1110. She said:

Just the whole outline of it [the essay]. How I write it. Revising and editing. Like my thesis, my introduction, my conclusion. Those things I can take. Just not the argument itself. Learning how to research was very helpful too. The formatting has actually helped me.

Jackie reported that "I actually found [the lectures] really interesting. I actually applied it to some of my other classes, and it worked, so it was really good. It was useful." She went on to say "I've written other papers. The lab [writing seminar] definitely helped with the structure, not the instruction from the lecture, but the instruction from the lab [writing seminar]. I've used that with my other essays a well."

The students in the experimental group also found uses for the strategies they learned in ARTS 1110. James said,

I try to incorporate as much as I can in my other courses. It has been very helpful. I am actually not sure if I would be doing as well as I am right now, or even passing, if it

weren't for Introduction to University. I learned SQ3R . . . and the different learning styles. That has really helped me."

Erin also found that "the things I learned in ARTS 1110 have been really useful." Donald reported that he was able to take what he learned in ARTS 1110 and apply it to one of his other courses. He said that "I was taking a physics course so that kind of helped with the multiple-choice tests." Spencer agreed that the lecture instruction was generally useful to him. He said "next semester I am taking a couple of history courses so I think this [course] will help."

Similarly, Evan found:

This course was a lot of help, like it definitely prepared me for going further in my university career . . . this will definitely help me if I had to write another essay, cause I just wrote a high school essay before and now I kind of understand how to write one in university and hopefully get a better mark.

However, some students were less certain that they would be able to transfer the knowledge they acquired in ARTS 1110 to other courses they were, or would be, taking. Paula said:

In each class that I have been doing essays, and how we do this one [ARTS 1110] is kind of different than what I do in my other classes. Counter-argument, I don't do that [in my other courses], so it kind of throws me off . . . They teach you to do it this way and that's the right way, but when I go and do the same thing in another class, and then I'll lose all these marks for doing it wrong when I would get it right in ARTS 1110.

Scott was also uncertain of the degree to which the writing instruction he had received in ARTS 1110 would transfer to other courses. He said:

If I go to another English class . . . I wouldn't be able to do as good as I am doing in this course. Just basically because we learned more of the technical part of writing, not the actual literature and how to write an essay in English class . . . I don't think it would be really helpful.

Summary: Transference of knowledge from ARTS 1110 to other courses. Students in both the control group and the experimental group reported that they had acquired some general study skills in ARTS 1110 that they were able to use in their other courses. The students who were taking other courses that required them to write essays, however, reported that they had less success in transferring the writing skills they had acquired in ARTS 1110.

Chapter Summary

This chapter addressed the quantitative results from the pretest and the posttest writing samples, as well as the qualitative research questions posed to each participant in the individual interviews. For the quantitative analysis, a quasi-experimental 2 x 2 ANOVA analysis of repeated measures with one between subjects variable (control and experimental) and one repeated measure (pretest, posttest) was used in an attempt to find significance between the students' writing scores on the pretest and the writing scores on the posttest writing samples, for both the control group and the experimental group. The qualitative analysis was carried out with the students who consented to take part in individual interviews. Individual themes were generated from the data, and direct quotes were used to provide evidence from the participants themselves.

The quantitative findings did show a statistical difference between the two groups (control and experimental) in terms of writing improvement over time on five of the six measures, content being the exception. It is worth mentioning that both the control group and the

experimental group showed improvement from the pretest to the posttest. The qualitative data, however, did not reveal a discernible difference between the groups. The comments made by the students in the control group were very similar to the comments made by the students in the experimental group. In each group, the same five themes emerged from the data. It is not surprising, perhaps, that the students' perceptions of learning in ARTS 1110 were very similar for both groups since the course content, the textbooks, and the fact that they received writing instruction were the same.

In addition, as was mentioned previously, the differences between the two methods of writing instruction were very subtle. It may have been the case that the different writing approaches were too similar to expect differing comments from the students. In addition, the instruction in the use of the IDDL model may not have been explicit enough for students in the experimental group to recognize it as distinct from other essay models. The fact that the students in the experimental group did not mention the IDDL writing model by name in interviews seems to support that assumption. The fact that the IDDL model included embedded questions may not have been important enough to the students to be noteworthy. In addition, for the majority of the students, the experience of learning to write formal essay assignments was a new one. In the absence of previous instruction in writing at the university level, they had no model against which to compare the IDDL model and, thus, were unable to comment on its relative usefulness. While the students did not mention the IDDL model by name nor did they perceive that I had taught them how to organize their essays, they did speak about some of the features of essay writing that I had taught them. These included the importance of effective and intentional organization, the use of metacognitive strategies such as monitoring of emerging text, and the relationship between decision-making and the development of meaning.

The next chapter will provide the limitations of the study, the implications for practice, the implications for further research, and the implications for program development.

Chapter 5

Conclusions and Implications

The purpose of this study was to investigate the effectiveness of teaching students to write argumentative essays using the IDDL model. The model has a series of embedded decision-making strategies incorporated within the framework (the discrete components of the model have been defined in chapters one and three) which are designed to assist students in the process of organizing their essays. This research was also designed to lead to a greater understanding of the potential value of using direct explicit instruction of single-cue writing strategies to make the invention process more manageable. Gigerenzer's work (2004) led me to hypothesize that teaching single-cue heuristics to students could help them address the individual decisions that Flower and Hayes (1981) identified as important components of the composition process. Gigerenzer (2004) found that successful heuristics could be easily taught and understood by novices. He believed that individuals could be taught to make good decisions in information poor environments based on the limited information they possess.

The study was conducted in five stages: (1) the first stage, conducted in September 2011, involved obtaining a timed pretest writing sample from both the control and experimental groups in two ARTS 1110 Introduction to University courses at the University of Manitoba; (2) the second stage, conducted from September to November 2011, involved the teaching of the IDDL writing model to the experimental group in both the class lecture, by me, and in the writing seminar, by the teaching assistants. The control group received instruction in the standard writing process model in both the lecture and the writing seminar; (3) the third stage, conducted in November 2011, involved obtaining a timed writing sample from both the control and experimental groups that served as the posttest; (4) the fourth stage, conducted in November

2011, involved having a research assistant conduct qualitative interviews with twenty students who had volunteered to be individually interviewed: ten from the control group, and ten from the experimental group; and, the fifth stage, conducted in December 2011, involved recording the students' second essay grades at the end of term.

Drawing Conclusions from the Data

The data were analyzed around the two major quantitative questions that formed the basis for this research: (1) What is the effect of teaching first-year students single-cue heuristics as measured by their growth in essay writing between a pre – and posttest measure?; and, (2) What is the effect of teaching first-year students a series of single-cue heuristics as measured by their second essay grades at the end of term, as reflected by the covariant score (i.e., the final essay score adjusted based on the pretest essay writing activity). Data were also analyzed from the following qualitative questions: (1) Tell me how you begin writing your essays in ARTS 1110?; (2) Tell me how you make decisions about organizing your essay; (3) Tell me what strategies, if any, did you find to be helpful in completing your essay? What strategies, if any, were not helpful?; and, (4) Do you feel more confident writing essays now that you have taken ARTS 1110? Why, or why not?

The results from this study indicate that there was no positive effect from teaching first-year students a series of single-cue heuristics as a method of organizing their argumentative essays. The control group significantly outperformed the experimental group on five of the six measures, excluding content, from the pretest to the posttest. The qualitative data did not indicate any notable differences in the use of writing strategies between the groups. The essay scores increased from the pretest to the posttest for both groups but that was to be expected considering the two groups had received three months of writing instruction. The limitations of

the study identified at the end of this chapter are provided in an attempt to give an explanation for why the control group outperformed the experimental group.

One of the findings from the data was that neither the students in the control group nor the students in the experimental group reported that I had provided any instruction in essay-writing during the lecture portion of the class. The absence of any comment on the teaching of the model in the lecture is disconcerting for many reasons. Though I provided instruction in essay-writing at the beginning of each lecture and spoke, in particular, on strategies for organization, that instruction was not reported in any meaningful way by the students in the individual interviews. I can only speculate on the reasons for this. It might be that students did not understand the purpose or relevance of the instruction as it was being given. It might also be that the students did not attend to the information because they assumed it would be covered in the writing seminar. It also might be the case that the students were not able to retain the information they received in the lecture until the point at which it was discussed in the writing seminar. As mentioned previously, it may be that the students were not able to contextualize the information because they were receiving it in a setting that they believed was normally devoted to other subjects. That is, they may have perceived the lecture hall to be the site in which they received information about concepts of learning and reasoning while the writing seminar was the site for learning to write. In the transcripts of the qualitative interviews, the writing seminar was frequently cited as the place in which writing instruction took place.

In retrospect, I should not have been surprised by the fact that none of the students in either group made a connection between the instruction they received in the lecture and the writing they did in the seminar. There are a number of reasons that might explain that particular finding. Firstly, the course in which the study took place is divided into two discrete sections, a

lecture section and a writing seminar, and it is possible that the students did not understand that the information they were receiving in the lecture portion could be used when writing the essay. Secondly, the lecture portion of the course and the writing seminar are scheduled two days apart which might have further complicated the process of students applying concepts from the lecture to the work they were performing in the writing seminar. That is, the de-contextualization of writing instruction from the writing process may partially explain why students did not recall receiving meaningful writing instruction in the lecture section.

It also might be the case that novice writers are inclined to focus on writing mechanics at the expense of organizational strategies. In this study, students from both groups displayed a similar tendency to overlook considerations of organization and structure when they revised their essays. The students' comments in the qualitative interviews about APA formatting revealed that some students attended to writing mechanics to a far greater extent than they did organization. Though the total number of points assigned to APA formatting was less than 10% of the over-all essay mark, students appeared to place great importance on correctness in the APA format.

Threats to Validity

Internal Validity

Internal validity can be compromised by factors that disrupt or weaken the relationship between two variables. As Shadish, Cook, and Campbell (2002) suggest, those factors may explain why the assumption of a causal relationship between the variables may be incorrect. Threats to the internal validity of this study will be discussed in the following order: (1) selection of participants; (2) maturation; (3) regression; (4) attrition; and, (5) testing (Shadish, Cook, & Campbell, 2002).

Selection of participants. Shadish, Cook, and Campbell (2002) found that “sometimes, at the start of an experiment, the average person receiving one experimental condition already differs from the average person receiving another condition” (p. 56). In research studies that employ intact classrooms, it is difficult to control for this threat to validity. However, in this study this threat was controlled by having all participants write the pretest writing sample.

Maturation. Maturation refers to the “natural changes that would occur even in the absence of treatment such as growing older, hungrier, wiser, stronger, or more experienced” (Shadish, Cook, & Campbell, 2002, p. 57). The phenomenon of maturation complicates data analysis by introducing some degree of ambiguity to the assignment of causality. This threat was minimized to the degree that it could be by having students write the pretest and posttest writing samples and by having an experimental and control group.

Attrition. One of the threats to internal validity is “experimental mortality” (Shadish, Cook, & Campbell, 2002, p. 59), a term that refers to the failure of some participants in an experiment to complete the outcome measures. In this study, there were a large number of students from the control group who did not complete the posttest writing sample. Though it is not possible to verify the circumstances under which students voluntarily withdrew from the experiment, it is possible that mortality altered the composition of the control group. The students who continued to participate may not have been representative of the original group. Unfortunately, it was not possible either to control for attrition or to predict the large attrition rate for the control group participants between the pretest and the posttest.

Testing. Sometimes previous experience in taking a test will influence scores when the test is taken again. As Shadish, Cook, and Campbell (2002) suggest, “[p]ractice, familiarity, or other forms of reactivity are the relevant factors and could be mistaken for treatment effects” (p.

60). In an attempt to control for the effect of practice and familiarity, students were asked to write the pretest and posttest writing samples using different writing prompts.

Threats to Construct Validity

Threats to construct validity refer to the degree of correspondence between study operations and the constructs used to describe those operations (Shadish, Cook, & Campbell, 2002). The threats to the construct validity of this study will be discussed in the following order: (1) monomethod of bias; (2) confounding constructs with levels of constructs; and (3) reactivity to the experimental situation (Shadish, Cook, & Campbell, 2002).

Monomethod bias. The monomethod bias refers to the possibility that the presentation of treatments may influence results. In this study, I was aware of the need to maintain consistency of instruction across both the control group and the experimental group but also aware of the need to isolate the effect of the respective writing model. I attempted to address this threat by instructing the TAs in strategies for implementing the IDDL model in the writing seminars. It was important that I ensure that the growth of students, if any, was related to the use of the respective writing strategy rather than to my instruction.

Confounding constructs with levels of constructs. Shadish, Cook, and Campbell (2002) stated that “sometimes an experimenter will draw a general conclusion about constructs that fails to recognize that only some of each facet of that construct were actually studied and that the results may have been different if different levels were studied” (p. 76). In some instances in control-treatment comparisons the treatment may be implemented at such low levels that no effects are observed, leading to an incorrect characterization of the study as showing that the treatment had no effect when the correct characterization would be that the treatment had no effect at such a low-level of implementation (Shadish, Cook, & Campbell, 2002). For this study,

teaching assistants were assigned the responsibility for teaching the IDDL model in the writing seminars. After the study had ended, it came to my attention that some teaching assistants may not have instructed students in the use of the model in the way that I had intended. In short, it appears that some deviated from the script they had received and may not have identified the individual steps of the model in detail. I had tried to account for this threat by meeting with the teaching assistants once a week over the course of the study to discuss the use of the IDDL model and to ensure that the model was being taught the same way.

Reactivity to the experimental situation. Shadish, Cook, and Campbell (2002) warn of the possibility that research participants will attempt to guess what the experimenter is studying and then adapt their behaviour. The threat to this construct was minimized by the use of deception, the conducting the individual interviews away from the experimental site, the minimization of experimenter interaction with participants, and the attempt to render the conditions less threatening by ensuring anonymity and confidentiality.

Limitations of the Study

In analyzing the data, it became apparent that there were many confounding variables that were not identified until after the completion of the study. These, therefore, could not be controlled during the study. The following section details the limitations that may have played a role in the final findings of this research.

The heuristic algorithm was possibly too complex (i.e., had too many steps) to operate as a heuristic. This was one of the criticisms that have been made of the tagmemic heuristic. As Gigerenzer (2004) argued, simplicity is an essential feature of heuristics. Similarly, the IDDL model may have failed to operate as a strategy because, from the perspective of the students,

there was little to distinguish it from the five-paragraph model with which the students were already familiar.

The experiment was not carried out in a laboratory setting, therefore, there were many confounding variables that I could not control: One of the major limitations of the study was that the majority of the teaching of the IDDL writing model in the experimental class was carried out by the teaching assistants. Despite weekly sessions conducted with the teaching assistants on how to teach the IDDL writing model, it is difficult to gauge whether the teaching assistants did indeed talk about the IDDL model and the depth to which they did so. Another limitation that may have hindered the effectiveness of the instruction by the teaching assistants was the fact that I felt I needed to limit access to the IDDL model online. Though the notes from both the lecture and the writing seminar are posted online, the outline for the IDDL model was not. In an effort to ensure that students' unmonitored access to the different models would not contaminate the data, the different models were only used on the white boards in the classrooms. This may have limited the teaching assistants' ability to work through examples of writing using the model.

A further limitation to the study was the way in which the lecture portion of the course operated. The lecture classes are comprised of approximately two hundred students in a large lecture theatre. This setting may not be conducive to teaching students to write. In the weekly seventy-five minute classes, I taught students in the experimental group to use the IDDL writing model when outlining their argumentative essays. Despite this instruction, the students in the experimental group who were interviewed indicated that they only received writing instruction in the writing seminar. Similarly, though I did attempt to teach the students in the control group to structure their essays using the writing process model, the students indicated that they did not receive writing instruction in the lecture. Both groups said that the only writing instruction they

received in the course was through the teaching assistants in the writing seminars.

Class size may also have had an effect on the study. In the course that served as the context for this research study, students met with me once a week in large-group sessions (approximately 180 students) and once a week in small-group sessions led by teaching assistants (approximately 30 students per group). The large-group sessions were taught using a lecture format while the small-group sessions were seminar-based. My pedagogical approach is predicated on my understanding of the way in which first-year students learn. In addition to approximately thirty years of experience in the classroom with first-year students, I have conducted research into their learning processes and have remained current in the literature regarding first-year learning. On the basis of that understanding, I have designed a course curriculum that focuses on the development of proficiency in three distinct areas: (1) understanding of rhetorical principles; (2) development of critical thinking skills; and, (3) acquisition of procedural skills in composition. In the large lecture theatres, I focus on conceptual knowledge, understanding that this is the kind of learning that generally occurs in large groups. To facilitate student engagement in the material, I ask questions, I frame concepts in thematically-based stories, I relate new ideas to students' prior knowledge, and I attempt to articulate the connection between the concepts being discussed in the lectures and the procedural tasks of the writing seminars. In the writing seminars, the emphasis is reversed, with students being taught to integrate the conceptual knowledge of the lectures with the procedural skills being practiced in the seminars. The seminars generally employ a social constructivist approach, allowing students to negotiate their understanding of concepts and procedures in order to develop a personally meaningful strategy for composition. The seminar groups permit students to work interactively with peers and teaching assistants.

While the class size of the lecture theatre may have limited the degree to which students were able to develop a procedural understanding of the IDDL model, they were provided with the opportunity to practice the strategy in the seminar groups. I had hoped that this combination of learning environments would have allowed students to benefit from the best of both the lecture and the seminar format.

The course textbook might have, in retrospect, interfered with the experimental group. The same textbook was used by both the control group and the experimental group. The content of the textbook tended to reinforce the writing process that was being taught in the control group class. This effect may have been magnified by the fact that the method described in the textbook was more traditional and, thus, may have been more familiar to students already. This may have been particularly true of students who did not attend the seminar regularly and who relied on the textbook for their organizational strategies.

An additional limitation was due to the unusual design of the course. The students attend one seventy-five minute lecture a week with the course instructor and one seventy-five minute writing seminar once a week with their teaching assistant. The fact that the students attend different rooms, with two different instructors, to perform different tasks may have led them to perceive that the different elements of the course were not linked in any way. This may have led them to regard the writing instruction they received in the lecture as being relevant only to the larger discussion of adapting to university studies. In short, it may not have been understood as procedural knowledge. This may explain why the instruction they received in either the IDDL writing model or the process model was not recalled when the students were being interviewed.

It should also be noted that the students self-selected for the individual qualitative interviews. This limited the responses to those students who volunteered their time. It may have

been the case that these students did not recall the models because they felt they had no need to do so. The majority (eighteen out of twenty) of the students reported that they had gotten a good mark on their first essay and were confident in doing as well on their second essay. It may have been the case that these students were working with a model of writing that was already providing them with success and thus saw no need to replace it. Under those circumstances, my instruction may not have seemed relevant.

The experiment did not test the implementation of the IDDL model. There were no data gathered to measure how many students used the IDDL model when drafting their essays. In the qualitative interviews, students were asked how they began writing their essays and if they indicated they started by using an outline, there was no follow-up question to determine which method of outline they used. This was a limitation which did not come to light until data analysis had begun. As a result, there was no way to determine whether the IDDL model was followed, and if it was used as intended.

It may also be that the concepts were relatively unfamiliar to the students. For many of the students, detailed instruction in formal essay-writing was a novel experience. In fact, many were learning to write an argumentative essay for the first time. It may also have been the case that the information that they were receiving in the lecture was so abstract as to appear as if it belonged to the conceptual instruction students received in the lecture rather than the procedural instruction they received in the writing seminars. It is also important to note that the scope of the qualitative study was limited. Only ten students from each group were interviewed. The results may have been different with a different group of students.

The last limitation is perhaps the most troubling. The writing instruction in the control group and the writing instruction in the experimental group may have been too similar. The

writing process (planning, translating, reviewing/revising) was not sufficiently distinguishable from the IDDL model (outlining, identifying evidence, putting in sources).

Implications for Further Research

Suggestions for further research based on the results of this study are:

- In order to test for the validity of the IDDL writing model, further research studies should be undertaken using smaller groups of students with one instructor teaching both the control and experimental writing seminars. This would reduce the likelihood that the writing instruction would be carried out in accordance with the script I supplied to each teaching assistant in both the control group and the experimental group.
- If I repeated the study, I would ensure that, in the lecture section of the course, the writing instruction using the IDDL model would be identified specifically as a strategy for assisting students to organize their argumentative essays. In hindsight, this might not have been stressed sufficiently in the experimental class.
- Students need to be taught to use the IDDL model using specific examples in which the various steps and individual decisions in the process are highlighted and explained.
- A follow-up study could also be undertaken to determine the degree to which the IDDL model has been utilized by students in their second year. This might reveal whether the students are making use of the model when writing essays in other courses.

Implications for Program Development

One of the limitations of the present study concerns the size of the lecture class and the

difficulties that are inherent in attempting to teach writing to a large group of students. The writing seminars are limited to approximately 30 students which permit more direct instruction and immediate response. At this point in time, it is not feasible economically to limit the lecture sections to groups of 30 students. This is, however, a model that might be more effective for writing instruction.

The second implication for program development lies in a review of the current course structure, (i.e., instructors lecture on course content while teaching assistants run the writing seminars.) It may be more effective to have course instructors who could teach both the lecture and the writing seminar. Anecdotally, in smaller sections of the course in which instructors have taught both the lecture content and the writing seminar back to back, the IDDL model appears to have been implemented successfully. In 2011, that model seems to have been effective in an evening section of ARTS 1110 where the number of students was limited to 40 and in three sections of the course that were offered for ELL students.

The IDDL model's pattern of organization may have worked better with students who did not have any experience with writing an essay following a writing model. From observations in other classrooms, the students who did not have English as their first language seemed to benefit from the organizational structure that the IDDL writing model provided. It may be that students who already know how to write an essay, or who already have a writing model in mind (e.g., the five paragraph model), are reluctant to adopt an unfamiliar method for organizing text.

One of the difficulties with the experimental situation lay in the fact that the IDDL model was being taught in isolation. The structure that lies beneath the model participates in the larger pattern of reasoning that was being taught in the lectures. In an attempt to isolate the model for research purposes, I may have failed to foreground the connection between those general patterns

of reasoning and the IDDL model, rendering the model too abstract. That failure may have compromised the students' ability to transfer their knowledge of the reasoning pattern to situations in which they were required to apply that knowledge.

Conclusion

This study emerged, in part, from my reflections on the research of Flower and Hayes (1986) which, through the use of talk-aloud protocols, investigated some of the differences between the writing processes of novice and experienced writers. Among their other findings, Flower and Hayes noted that there was a fundamental difference between the ways in which novice and experienced writers made writing decisions. In particular, there appeared to be important differences in the processes of composition. Further investigations into the differences between the degree to which novice and experienced writers had internalized particular strategies, and the corresponding difference between the short-term memory resources available for the memory-intensive task of composition and text organization (McCutchen, 1996), led me to speculate on the potential benefit of teaching students to off-load some of the cognitive work to their writing environments (Todd & Gigerenzer, 2007). By providing a structure that facilitated the logical organization of individual components of the essay, I hoped to free novice writers to concentrate on the important task of generating and refining ideas.

In particular, the study was designed to investigate the effectiveness of teaching students to write essays using a multi-cue decision-making strategy that asked students to **I**nscribe the writing space, **D**efine the rhetorical problems locally, **D**iscover the information necessary to solve the local rhetorical problems, and **L**ink the individual units of the essay logically (IDDL). The purpose of the strategy was to facilitate decision-making during the process of text-generation. My experience with novice writers has suggested that students who struggle with the

process of writing essays do so, in part, because they are stymied by the challenge of *inventing* or *creating* text and form. One of the intended benefits of the IDDL model was the provision of a scaffold by which students could arrange, and rearrange, the component ideas of their essay drafts.

In the end, the students who were instructed in the use of the IDDL model as a pattern of organization did not perform as well as the students who wrote their essays using the process model of writing (planning, generating, translating, and reviewing). It is difficult, without further exploration, to identify whether the theoretical basis for the model is unsound, whether the model itself is flawed, whether the similarities between the two methods of instruction were too great for students to recognize meaningful differences, or whether there was a problem with the method of instruction.

Chapter 6

Implications for First-Year Teaching Practices

This study was designed to test the effectiveness of using the IDDL model to teach effective patterns of organization for the construction of argumentative essays. Amongst its key features, the model includes embedded questions to guide first-year students through the hierarchically arranged series of decisions that inform the composition of academic essays. Though this study did not establish the efficacy of the IDDL model, there were a number of insights that emerged that may prove useful to first-year writing instructors. Given the nature of the model, it is not surprising that many of the observations will speak to the challenge of teaching students to engage critically in the decision-making processes that are inherent in composition. Some of the other observations will address the challenges of teaching first-year writing courses in large classrooms, the challenges of teaching writing using cognitive process theory and heuristics, the effect of direct explicit instruction, teaching metacognitive awareness to enhance decision-making in the writing process, visual representation of organization, the effect of naming on students' perceptions of class content, and the importance of the repetition of key concepts and procedures.

Class Size

Any discussion of class size has to extend beyond mere calculations of student-instructor ratios and the total number of students in the classroom. In order to determine the optimal class size, one needs to consider both the course objectives and outcomes and the mode of instruction best suited to those objectives and outcomes. It is usually the case, however, that first-year courses are taught in large classrooms, with large class sizes, independent of the degree to which such a setting is appropriate. According to Cuseo (2007), it is not unusual for first-year

instructors to find themselves teaching in large lecture theatres that accommodate one hundred or more students. The challenge for instructors of first-year writing courses is to determine strategies for engaging students in discussions when the room size is not conducive to meaningful dialogue. The lecture format, which is the typical style of instruction in large class sizes, is not usually optimal for learning unless instructors make adjustments to their modes of teaching.

This study may provide insights into the ways in which class size impacts first-year writing instruction. The study was carried out in a course that included both lectures on theory in large lecture theatres and opportunities to apply that theory in small seminar groups. The lectures, conducted with approximately 180 students, and the writing seminars, conducted with approximately 30 students per seminar, were each held once a week. Due to the large enrolment of students in the ARTS 1110 course, it was not feasible to limit the lectures to 30 students but each section of the course, including both the control and the experimental sections, were divided into seminar groups for the writing instruction. As Hogan and Kwiatkowski (1998) noted, the division of large classes into smaller groups can accommodate a more student-centred approach that encourages class participation.

The IDDL model was taught in both the lecture theatre and the seminar sections. On the basis of the evidence from the qualitative data, it appears that the students did not remember receiving any writing instruction in the lecture portion of the course. They reported that all writing instruction took place in the writing seminars with the teaching assistants. The possible reasons for the discrepancy were examined in detail in Chapter 5. However, the pedagogical implications of the finding may require further exploration. As Cuseo (2007) reported, the structure of lecture-style teaching often involves minimal student involvement and many

students take a more passive approach to learning in lecture theatres. Cuseo (2007) concluded that lectures may be effective for the teaching of information but they generally do not promote changes in thought patterns, attitudes or behaviours. Similarly, Halpern and Hakel (2003) found that lectures are not as effective in courses that require students to both remember and understand the material.

The problems associated with class size, therefore, may not derive as much from the numbers of students as from the failure to consider the degree to which a respective teaching method is appropriate to the specific learning objective. In the case of this study, the lecture discussion of the IDDL model may have been too abstract to be entirely successful because, during the lecture, students' interaction with the model was theoretical. Though I had believed that the opportunity to work with the model in the associated seminar section might encourage the students to integrate the conceptual instruction with the procedural instruction, this proved not to be the case. One of the observations that emerge from this study is the suspicion that instruction that is abstracted from the actual performance of task may lead to difficulties in comprehension. That is, in this study, students received conceptual instruction from the course instructor but step-by-step procedural instruction from teaching assistants at another time, in a different room, and in a different format. The confusion this caused was evident in the qualitative data where students reported that they received no writing instruction in the lecture but then proceeded to discuss the writing instruction they received. It may be that the students did not or could not recognize the relevance of the instruction because it was not directly tied to the task. Thus, it may be important for first-year instructors to ensure that writing instruction is contextualized.

Cognitive Process Theory and Heuristics

Flower and Hayes's (1981) cognitive process theory of writing identifies the writing process as a hierarchical structure of embedded decisions. This is the theoretical underpinning that informs the IDDL model. The model is intended to facilitate the decision-making process of novice writers, in part at least, through the use of heuristic problem-solving techniques. The decision to employ heuristic problem-solving techniques was based on two principles: (1) there is evidence that heuristics offer the potential to facilitate problem-solving at discrete points in the writing process (Hillocks, 1986; Lauer, 1970; Young et al., 1970); and (2) there is evidence that problem-solving heuristics can be taught using direct explicit instruction (Gigerenzer, 2004; Polya, 1957). The study, then, was predicated on the belief that teaching students to write using a multiple-stage model that was structured on a small number of single-cue decision-making heuristics would allow students to perform better in academic writing assignments across curriculum.

While that did not prove to be the case in this study, there were, nevertheless, two important insights regarding heuristics that emerged. The first has to do with the complexity of the IDDL heuristic algorithm. My original purpose in teaching heuristics was to render the decision-making process of essay composition simpler for novice students. Though I thought I had been mindful of Gigerenzer's (2004) maxim that successful heuristics are those that are simple and easily understood by novices, in some cases the complexity of the model appears to have been problematic. In reflecting on the study, it has occurred to me that, while each of the individual steps in the algorithm might have been manageable, the number of steps may have created difficulties. I would, therefore, caution other instructors of first-year writing courses to be aware of the *compound complexity* of multi-stage models and to introduce new models

incrementally.

I would also note that students may be reluctant to accept new procedures until their existing strategies become noticeably ineffective. That is, there is an efficiency to operating within a known process and, therefore, students may have to recognize a profound advantage to a novel approach before they are willing to undertake the effort necessary to integrate it. In this study, it appeared that many students who were accustomed to the traditional process approach to essay-writing resisted the shift to the IDDL model because they did not perceive a great enough advantage in doing so. It is important to bear in mind that there is a tension, for students, between the promise of novel approaches and the efficiency of known procedures. Students need to perceive that the advantage of the novel approach is worth the effort of departing from the familiarity of the known procedure.

Direct Explicit Instruction

The need for direct explicit instruction in writing procedures, which has already been identified in the literature (Segev-Miller, 2004), emerged again in this study. Many students commented that they found both the instructional emphasis on process and the direct interventions from instructors and teaching assistants helpful. While the experimental evidence does not demonstrate an advantage to the use of the IDDL model, the qualitative data does reveal that many students perceived the explicit instruction to be useful. This is consistent with Flower's (1989) study that indicated that writing instruction is more effective when students understand writing as a series of hierarchically arranged, inter-related decisions that are made at distinct stages in the writing process. Flower further suggested that teaching the cognitive process theory of writing is effective because it encourages students to monitor the individual decisions and determine the effect that each has on the emerging text. McCormick (2006) has

also stressed the importance of explicit teaching of the discrete processes involved in the larger process of essay composition.

The recognition of the need for such instruction may be tied to the observations that emerged from investigations into the writing processes of novice and experienced writers. Studies of the writing practices of the two groups (Flower & Hayes, 1981) have indicated that experienced writers do not only write more effectively than novice writers. They write differently. During the process of composition, experienced writers will focus, primarily, on the development of meaning, understanding that they will return during the revision phase to refine the alignment of their respective emerging texts. This understanding of the hierarchy of decisions was a key finding of Flower and Hayes (1981). Experienced writers make decisions in an order that allows them to proceed through the composition. Novice writers, by contrast, are often undone by their inability to orchestrate the necessary decision-making. They may understand, for instance, that their purpose is to develop a coherent body of text, leading the reader in an orderly fashion from the introduction to the conclusion. That process, however, is complex, with a number of subordinate decisions supporting the larger purpose. Novice writers often appear to attend either to the subordinate decisions independent of the larger purpose or to attend to the larger purpose with no understanding of the role the subordinate decisions play in that larger purpose. A model like the IDDL model allows novice writers to focus on a single aspect of the composition process at one time. It also allows instructors to concentrate on particular aspects of the composition process discretely, while still facilitating a discussion of the relationship of one aspect of the composition process to the larger essay.

Teaching Metacognitive Awareness to Enhance Decision-Making in the Writing Process

One of the difficulties faced by first-year writing instructors is the challenge of moving

students from their comfortable paradigms and practices to new and unfamiliar ones. This is particularly true when working with students who have enjoyed success previously by using the strategies that are being replaced. When teaching first-year students to adjust their writing practices to accord with the changed expectations of college and university, instructors are asking students both to transfer their existing knowledge of writing to a new writing situation and to modify and adapt that knowledge. As noted above, such modification to existing practices can be difficult for students. They are often being asked to surrender their reliance on the five-paragraph essay, a form that they had understood to require of them little in the way of critical thinking. Similarly, because they are now operating in a multi-discourse writing environment, they are obliged to think about purpose and audience in a new way. Rather than relying upon a single set of writing protocols, they must reflect the specific ontological and epistemological assumptions that inform a particular discourse community. In short, they must learn to think about the effect that their writing decisions might have on their text and, by extension, their respective audience.

The modeling and foregrounding of metacognitive strategies is one of the methods that instructors may want to consider when guiding students through the development of their own decision-making faculties. Such instruction often translates into a greater understanding of the purpose and effect of particular decisions, and changes the way that “writers’ compose by helping them employ more sophisticated composing processes when writing” (MacArthur, Graham & Fitzgerald, 2006, p. 188). By teaching students to monitor the effects of their respective writing decisions, instructors also teach students to exploit the “relatively small number of cognitive processes that were able to account for a diverse set of mental operations during composing” (Flower & Hayes, 1981, p.188). This mode of instruction may both

“[provide] a way to account for individual differences in how writers compose” (O’Brien Moran & Soiferman, 2010, p. 7) and move novice writers closer to the writing process followed by experienced writers.

There are a number of ways in which metacognitive strategies can be taught in the classroom: (a) instructors can model self-monitoring by performing a task and reflecting on it aloud, thereby allowing students to observe the process (Gourgey, 1998); (b) instructors can walk students through the process of self-selecting metacognitive strategies (students who self-select strategies are more successful than those who adopt teacher-imposed strategies); (c) instructors can guide students through the internalization of self-monitoring strategies by using scaffolding techniques that gradually reduces support as students learn to self-monitor; (d) instructors can use explicit instruction to teach students to analyze and simplify problems; and, (e) instructors can train students to ask higher order questions to guide their process of composition (O’Brien Moran & Soiferman, 2010).

Visual Representation of Organization

Students appear to struggle with the abstractions that often inform discussions of rhetorical theory. While instructors may imagine that their directions and suggestions are clear, those directions and suggestions are often dressed in the language of the discourse of rhetoric and, thus, are not immediately comprehensible to a novice writer. By using visual representations to foreground the relationship of the parts to the whole, instructors are able to render the abstract more concrete. They are able to demonstrate the purpose of certain rhetorical techniques by illustrating the effect that such techniques might have. Such demonstrations appear to be more effective than abstract discussion because students are better able to apprehend the causal connection between the writing decision and its effect on the text. Visual models, like the IDDL

model, provide a device through which the instructor can demonstrate, in concrete terms, the dynamics of specific rhetorical principles.

Models also address a challenge implicit in the essential relationship between writing instructors and writing students. The writing instructor, an experienced writer, has already internalized many of the procedures she or he is demonstrating and resorts to those procedures without taxing the working memory. By contrast, the novice writer is obliged to actively balance questions of structure and form, on the one hand, and questions about the development of meaning, on the other. The novice writer, then, necessarily struggles with the limits of working memory to a greater degree than does the experienced writer (McCutcheon, 1996). By employing a model as a teaching device, the instructor is able to off-load many principles of essay structure to the page, allowing the student to visualize those principles while simultaneously participating in discussions of the development of ideas.

Effect of Naming on Students' Perceptions of Class Content

It also may be the case that students' understanding of content is framed by the naming conventions of the different elements of the course. Because the writing seminar was understood to be the site of writing instruction, students expected content to be related to writing. On the other hand, since the content of the lecture was identified as "Learning to Learn" and "Reasoning Across Curriculum", the de-contextualized schemas for writing may have seemed irrelevant to the students. This reliance on the nominal categories also emerged in the qualitative interviews during which students conflated APA instruction and general writing instruction, saying that they learned a great deal about formatting in APA and then began to discuss features of writing that would apply to the majority of college/university level writing assignments (e.g. need for evidence, clarity of focus, coherence, etc.). This may explain why, in this research, the students

did not use the term “IDDL” in any of the qualitative interviews. Though the term was used in the lecture portion of the class (a setting in which the students did not perceive that they were receiving writing instruction), it may not have been used as extensively in the writing seminars.

It appears that students may use the names of courses, or units within a course, as an index to the content of the respective course or unit. That is, they may interpret the content of particular courses by reference to the naming conventions used for different courses or different components within a course. If that is the case, instructors may need to be more aware of the semiotics of course names and the effect of students’ interpretations of course names.

Repetition of Concepts

One of the challenges with first-year instruction derives from the degree to which students are exposed to competing sources of information and competing authorities. Students tend to remember information that is consistent with their prior knowledge and they often default to prior knowledge when completing assignments (Applebee, 1984; Hillocks, 1986). This may be particularly problematic when instructors are asking students to replace an existing paradigm with a new one. Students are also more likely to recall information when they have been exposed to it a number of times (McCutchen, 1996). Given the circumstances under which students were introduced to the IDDL model, the need to effect a paradigm shift through repetition and reinforcement may have been problematic. In order to achieve mastery, students need repeated exposure to concepts and procedures.

In this study, members of the experimental group were not provided with the IDDL model in either paper or electronic format. The model was taught in the lectures using PowerPoint slides that had not been posted on the class website and taught in the writing seminars by teaching assistants who drew the model on the whiteboard. The model was never

provided to the students as a handout. This was intended to ensure the integrity of the study by minimizing the likelihood that the members of the control group would be exposed to the model. However, the attempt to control for bias may have inadvertently introduced one. That is, my efforts to restrict access to the model may have limited its exposure for the students in the experimental group. In retrospect, I should have provided the students with a paper copy of the model for use in the writing seminars. Their ability to adapt to the model may have been compromised by their inability to work through the steps repeatedly.

This study serves as a reminder of the importance of repetition when introducing students either to a new concept or to a concept that departs slightly from their existing knowledge. Even with the rapid pace of instruction in university or college classes, it is necessary to find time to consolidate new ideas or procedures. The importance of repeated exposure to material to ensure long term retention has been established by research (McCutchen, 1996). However, in many first-year courses, especially those held in large lecture theatres, there is a temptation to assume that a single demonstration of new concepts will lead to long-term retention. While it may be the case that declarative knowledge can be taught in this way, procedural knowledge generally requires repeated exposure and repeated opportunities for practice. First-year instructors may want to ensure that important concepts are discussed many times and that students are provided with a number of opportunities to apply those concepts. In addition, it may be important to increase the exposure to procedures by providing handouts or online access to PowerPoint slides.

Conclusion

In the process of research, even those studies that lead to unexpected findings tend to yield useful information. That was certainly the case in this instance. The specific purpose of the study was to test the efficacy of a particular multi-stage heuristic algorithm. The idea that

occasioned the study, however, was the suspicion that some of the challenges facing both novice writers and the instructors of novice writers might be better managed by resorting to the principles of ecological rationality. By off-loading to the writing environment some of the cognitive load required by the writing process, novice writers might be able to concentrate more fully on the decisions they encounter while attempting to draft coherent and purposeful essays. Writing models can be used as scaffolding devices, subtly reinforcing patterns of organization that could be off-loaded to the writing environment while the students were composing essays. This may allow students to internalize knowledge of structure both through repeated exposure and explicit instruction on the part of instructors and teaching assistants.

Instructors might also benefit by recourse to models that permit a meaningful discussion of the relationship between writers' discrete decision-making processes and the corresponding effect. Just as the model allows students to recognize the applicability of particular writing strategies at discrete stages in the writing process, so does it permit instructors to illustrate the purpose of different writing decisions by foregrounding the effect each decision might have on the essay draft. The visual representation of the relationship of the discrete elements facilitates a discussion of the decisions novice writers make. This could prove useful to instructors of first-year writing students as those students develop their understanding of the writing process.

Most importantly, perhaps, instructors must remember that the development of skills that require procedural understanding, as writing does, generally call for a particular pedagogical approach. Because students are often being asked to undergo a paradigmatic shift, fundamentally changing their understanding of the nature of a particular process, instruction needs to be tailored to that goal. The learning environment ought to be one that permits the direct and explicit instruction necessary for changes in attitude and skill development. As Cuseo (2007) observed,

though lectures in large halls may be an efficient way to disseminate information, they are a less effective way of engendering changes in thought patterns, attitudes or behaviours. This study operated on the assumption that students might benefit from a hybrid instructional model (i.e., a lecture format for instruction in concepts and a seminar for instruction in application). Whether that model serves as an effective compromise is uncertain. It does appear to be the case, however, that students' understanding of content is influenced by their understanding of the naming conventions of courses or course sections. While this study did not specifically investigate the efficacy of teaching metacognitive strategies to enhance decision-making in writing, the literature does appear to support its use. If cognitive process theory is to inform writing instruction, it is important that such instruction be imbued with training in cognitive processes. Students need to be taught the skills necessary to predict whether a particular writing decision will yield the desired results. Finally, though this study did not establish the relative advantage of the IDDL model as a teaching tool, I continue to believe that there is merit to the practice of teaching of heuristic-based strategies in first-year writing classes. In fact, I believe that novice and experienced writers may be distinguished, in part, by the use of heuristics to guide composition in information poor writing environments. However, instructors may be well-advised to reflect on the challenges that emerged in this study when they are considering their own lesson plans. Gigerenzer (2004) cautioned that heuristics should be simple. Based on my experience in this study, I would add this caveat: any writing tool or strategy that is being introduced to novice writers should not be more memory intensive or intellectually complex than the process it is meant to simplify.

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Appendix A

The IDDL Model

First strategy: Inscribe the writing space

The first strategy of the IDDL model uses the multi-cell frame below to visually represent the difference between the un-inscribed writing space and the inscribed writing space. In the space on the left side, the writer is obliged to invent the form of the essay. In the space on the right, the writing space has been inscribed with a form that will be populated with pragmatic tasks in stages 2-4.

(1) Inscribe the writing space.

<p>(un-inscribed writing space)</p>
--

<p>(inscribed writing space) Thesis statement with “because” connector between the claim and the reasons for that claim.</p>
<p>Thesis statement proven.</p>

3.8.1.2 Second strategy: Define the rhetorical problems locally.

The second strategy of the IDDL model asks students to use the arguable

proposition to define the rhetorical problems locally. The arguable proposition, which includes both the claim that the essay is exploring and the reasons for that claim, provides direction to the writer by specifically identifying the sub-theses that need to be explored and/or substantiated.

(2) Define the rhetorical problems locally.

Introduction: Thesis statement with “because” connector between the claim and the reasons for that claim.

e.g. It is reasonable to believe that global warming is the result of human activity because **(a) global warming seems to correspond with the greenhouse effect, (b) increased carbon emissions contribute to the greenhouse effect, and (c) carbon emissions have increased as a result of human activity.**

(1) It is reasonable to believe that global warming is the result of human activity because **global warming seems to correspond with the greenhouse effect.**

(2) It is reasonable to believe that global warming is the result of human activity because **increased carbon emissions contribute to the greenhouse effect.**

(3) It is reasonable to believe that global warming is the result of human activity because **carbon emissions have increased as a result of human activity.**

Conclusion: Thesis statement proven.

It is reasonable to believe that global warming is the result of human activity because **(a) global warming seems to correspond with the greenhouse effect, (b) increased carbon emissions contribute to the greenhouse effect, and (c) carbon emissions have increased as a result of human activity.**

Third strategy – Discover the information necessary to solve the local rhetorical problems.

The third strategy asks students to focus their research using the rhetorical problems that had been defined in the second strategy. The research then becomes more purposeful, guided by a specific and identifiable need. Research continues as long as it is fruitful. At the point at which the student’s efforts result in no new information, either in support of or in opposition to the claim, the search can be concluded.

In the event that there is no supporting evidence, the student needs to consider the possibility that the claim is wrong and the arguable proposition should be adjusted or replaced.

(3) Discover the information necessary to solve the local rhetorical problems.

Introduction: Thesis statement with “because” connector between the claim and the reasons for that claim.

e.g. It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the greenhouse effect, increased carbon emissions contribute to the green-house effect, and carbon emissions have increased as a result of human activity.

It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the greenhouse effect.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

It is reasonable to believe that global warming is the result of human activity because increased carbon emissions contribute to the greenhouse effect.

What needs to be proven?

What evidence is required?

<p>Are there exceptions or limits to the claim?</p> <p>It is reasonable to believe that global warming is the result of human activity <u>because</u> carbon emissions have increased as a result of human activity.</p> <p>What needs to be proven? What evidence is required? Are there exceptions or limits to the claim?</p>
<p>Conclusion: Thesis statement proven.</p> <p>It is reasonable to believe that global warming is the result of human activity <u>because</u> (a) global warming seems to correspond with the greenhouse effect, (b) increased carbon emissions contribute to the greenhouse effect, and (c) carbon emissions have increased as a result of human activity.</p>

Fourth strategy - Link the individual units of the essay logically.

The fourth strategy asks the student to think about the logical relationship between the individual units. Though the model is designed, in part, to allow students to work on each unit independently, the early strategies had identified the individual units by reference to their function within the larger argument of the essay. Having written the individual units, the student now links them to ensure that the reader is led from the thesis, through the evidence in support of the thesis, to the conclusion.

(4) Link the individual units of the essay logically.

Introduction: Thesis statement with “because” connector between the claim and the reasons for that claim.

e.g. It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the green-house effect,

increased carbon emissions contribute to the green-house effect, and carbon emissions have increased as a result of human activity.

What is the relationship of this paragraph to the introduction?

It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the green-house effect.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

What is the relationship of this paragraph to the previous paragraph?

It is reasonable to believe that global warming is the result of human activity because increased carbon emissions contribute to the green-house effect.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

What is the relationship of this paragraph to the previous paragraph?

It is reasonable to believe that global warming is the result of human activity because carbon emissions have increased as a result of human activity.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

Conclusion: Thesis statement proven.

It is reasonable to believe that global warming is the result of human activity

because **(a) global warming seems to correspond with the greenhouse effect,**

(b) increased carbon emissions contribute to the greenhouse effect, and (c)

carbon emissions have increased as a result of human activity.

Appendix B

Teaching the TA's How the IDDL Model Works

Initially, the investigator spent an additional two hours with the six teaching assistants of the treatment group, introducing them to the IDDL writing model for teaching writing as a whole. They were taught how to use the four strategies for invention themselves. To accomplish this, they were asked to write an essay using one of the pre-test prompts integrating the steps of the IDDL model. Finally, using the teaching assistants' own experience writing the pre-test, as an example, the instructor trained the teaching assistants in how to instruct others on each of the four component strategies of the IDDL model. The teaching assistants were taught to teach the entire system first, and then to teach the first three strategies of the IDDL model for the first two weeks, and then to teach all four elements over the last two weeks of the four week period. They were taught to identify explicitly the applicability of the IDDL system to the students' own writing assignments. Total teaching time of the IDDL system took place over four consecutive weeks in the writing seminars. Scripts were provided to each of the six teaching assistants to ensure consistency and reliability of instruction. The scripts ensured that the IDDL model was being taught the same way in both the lecture and the writing lab.

Appendix C

Script for Teaching Assistants

Each week in your writing lab we are going to be getting together to practice writing strategies that will assist you in completing the essay requirements for this course. Today I will be going over a writing model, the IDDL model that Professor O'Brien Moran discussed in class. If you will remember there are four parts to the process. (TA's will display slides of the IDDL model on the overhead projector). Today we are going to be talking about the first three strategies which are called: **I**nscribe the writing space; **D**efine rhetorical problems locally; and, **D**iscover the information necessary to solve local problems.

The first strategy of the IDDL model uses the multi-cell frame shown here to visually represent the difference between the un-inscribed writing space and the inscribed writing space. In the space on the left side, the writer is obliged to invent the form of the essay. In the space on the right, the writing space has been inscribed with a form that will be populated with pragmatic tasks in stages 2-4.

SLIDE 1

First strategy: Inscribe the writing space.

(un-inscribed writing space)

(inscribed writing space) Thesis statement with “because” connector between the claim and the reasons for that claim.
Thesis statement proven.

SLIDE 2

Second strategy: Define the rhetorical problems locally.

The second strategy of the IDDL model asks students to use the arguable proposition to define the rhetorical problems locally. The arguable proposition, which includes both the claim that the essay is exploring and the reasons for that claim, provides direction to the writer by specifically identifying the sub-theses that need to be explored and/or substantiated.

(2) Define the rhetorical problems locally.

Introduction: Thesis statement with “because” connector between the claim and the reasons for that claim.

e.g. It is reasonable to believe that global warming is the result of human activity because (1) **global warming seems to correspond with the green-house effect**, (2) **increased carbon emissions contribute to the green-house effect**, and (3) **carbon emissions have increased as a result of human activity**.

(1) It is reasonable to believe that global warming is the result of human activity because **global warming seems to correspond with the green-house effect**.

(2) It is reasonable to believe that global warming is the result of human activity because **increased carbon emissions contribute to the green-house effect**.

3) It is reasonable to believe that global warming is the result of human activity because **carbon emissions have increased as a result of human activity**.

Conclusion: Thesis statement proven.

It is reasonable to believe that global warming is the result of human activity because (a) **global warming seems to correspond with the greenhouse effect,** (b) **increased carbon emissions contribute to the greenhouse effect,** and (c) **carbon emissions have increased as a result of human activity.**

Third strategy – Discover the information necessary to solve the local rhetorical problems.

The third strategy asks students to focus their research using the rhetorical problems that had been defined in the second strategy. The research then becomes more purposeful, guided by a specific and identifiable need. Research continues as long as it is fruitful. At the point at which the student's efforts result in no new information, either in support of or in opposition to the claim, the search can be concluded.

In the event that there is no supporting evidence, the student needs to consider the possibility that the claim is wrong and the arguable proposition should be adjusted or replaced.

SLIDE 3

(3) Discover the information necessary to solve the local rhetorical problems.

Introduction: Thesis statement with “because” connector between the claim and the reasons for that claim.

e.g. It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the green-house effect, increased carbon emissions contribute to the green-house effect, and carbon emissions have increased as a result of human activity.

<p>It is reasonable to believe that global warming is the result of human activity <u>because</u> global warming seems to correspond with the green-house effect.</p> <p>What needs to be proven? What evidence is required? Are there exceptions or limits to the claim?</p>
<p>It is reasonable to believe that global warming is the result of human activity <u>because</u> increased carbon emissions contribute to the green-house effect.</p> <p>What needs to be proven? What evidence is required? Are there exceptions or limits to the claim?</p>
<p>It is reasonable to believe that global warming is the result of human activity <u>because</u> carbon emissions have increased as a result of human activity.</p> <p>What needs to be proven? What evidence is required? Are there exceptions or limits to the claim?</p>
<p>Conclusion: Thesis statement proven.</p> <p>It is reasonable to believe that global warming is the result of human activity <u>because</u> (a) global warming seems to correspond with the greenhouse effect, (b) increased carbon emissions contribute to the greenhouse effect, and (c) carbon emissions have increased as a result of human activity.</p>

Fourth strategy - Link the individual units of the essay logically.

The fourth strategy asks the student to think about the logical relationship between the individual units. Though the model is designed, in part, to allow students to work on each unit independently, the early strategies had identified the individual units by reference to their function within the larger argument of the essay. Having written the

individual units, the student now links them to ensure that the reader is led from the thesis, through the evidence in support of the thesis, to the conclusion.

SLIDE 4

(4) Link the individual units of the essay logically.

Introduction: Thesis statement with “because” connector between the claim and the reasons for that claim.

e.g. It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the green-house effect, increased carbon emissions contribute to the green-house effect, and carbon emissions have increased as a result of human activity.

What is the relationship of this paragraph to the introduction?

It is reasonable to believe that global warming is the result of human activity because global warming seems to correspond with the green-house effect.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

What is the relationship of this paragraph to the previous paragraph?

It is reasonable to believe that global warming is the result of human activity because increased carbon emissions contribute to the green-house effect.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

What is the relationship of this paragraph to the previous paragraph?

It is reasonable to believe that global warming is the result of human activity because carbon emissions have increased as a result of human activity.

What needs to be proven?

What evidence is required?

Are there exceptions or limits to the claim?

Conclusion: Thesis statement proven.

It is reasonable to believe that global warming is the result of human activity because **(a) global warming seems to correspond with the greenhouse effect, (b) increased carbon emissions contribute to the greenhouse effect, and (c) carbon emissions have increased as a result of human activity.**

Though the IDDL writing model has four discrete elements as described above, the first three strategies are intrinsically linked. Therefore, the Teaching Assistants will focus on the first three strategies (i.e., IDD) for the first two weeks and the entire system (i.e., IDDL) for the last two weeks. This will give the students four weeks of instruction while they are completing their first 1500 word essay. In each of the slides, the relevant section has been highlighted in bold.

*Appendix D*Scoring Rubrics
Analytic Writing Rubric #1

Quality Criteria	No, or Limited, Proficiency	Some Proficiency	Proficiency	High Proficiency
Thesis/Focus (clarity of purpose)	No indication of thesis or purpose	Thesis and purpose are vague or only loosely related to the writing task.	Thesis and purpose are relatively clear and match the writing task.	Thesis and purpose are clearly articulated and match the writing task.
Organization	Little, or no, evidence of an organizational strategy.	Some signs of logical organizational strategy. May have abrupt or illogical shifts. Flow of ideas may be ineffective.	Organization supports thesis and purpose. Transitions are generally effective. Flow of ideas could be improved.	Organizational strategy serves the purpose identified in the thesis. Sequence of ideas is effective. Transitions are effective.
Support/Reasoning	Offers simplistic, undeveloped, or obscure support for ideas. Makes inappropriate or irrelevant generalizations and/or faulty assumptions.	Offers somewhat obvious statements of support for thesis. Supporting evidence lacks specificity, is not fully explored and/or is repetitive.	Offers solid but predictable reasoning. Assumptions are not always recognized or made explicit. Contains some appropriate details or examples.	Substantial, logical, and concrete development of ideas. Assumptions are made explicit. Details are germane and convincingly interpreted.
Score	1	2	3	4

Overall score: _____ (1-4, with 1 representing limited proficiency and 4 representing high proficiency)

(adapted from Barbara Walvoord, Winthrop University, Virginia Community College System, University of Washington)

Analytic Writing Rubric #2

	Ineffective	Emerging	Competent	Excellent	Index Score (use whole numbers)
Organization	1	2	3	4	
The purpose and focus are clear, with an arguable claim that is clear and organization that is purposeful and effective.					
Coherence	1	2	3	4	
Connections between, and among, ideas are logical, with transitions that serve the argument established by the arguable claim.					
Content	1	2	3	4	
Supporting evidence is relevant and effectively integrated, with claims and ideas well supported and well developed. Alternative perspectives are carefully considered carefully and represented fairly.					

Overall evaluation score - /12

(adapted from Long Beach Analytical Writing Rubric, California State University)

Appendix E

Ethics Approval Certificate



UNIVERSITY OF MANITOBA | **Ethics**
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APPROVAL CERTIFICATE

September 2, 2011

TO: Michael O'Brien-Moran (Advisor S. Straw)
Principal Investigator

FROM: Judy Inglis, Acting Chair
Education/Nursing Research Ethics Board (ENREB)

Re: Protocol #E2011:078
"An Investigation into the Effect of Providing First-year University Students with Direct Explicit Instruction in the Use of Single-cue Writing Strategies"

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- If you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to the Office of Research Services, fax 261-0325 - please include the name of the funding agency and your UM Project number. This must be faxed before your account can be accessed.
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba Ethics of Research Involving Humans.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html) in order to be in compliance with Tri-Council Guidelines.