2015

The Power of Critical Reflection: Exploring the Impact of Rhetorical Stories on Metacognition in First-Year Composition Courses

Amy Elizabeth Ratto Parks
The University of Montana

THE POWER OF CRITICAL REFLECTION: EXPLORING THE IMPACT OF RHETORICAL STORIES ON METACOGNITION IN FIRST-YEAR COMPOSITION COURSES

By

AMY ELIZABETH RATTO PARKS

Bachelor of Arts in Creative Writing, Miami University, Oxford, Ohio, 1998
Master of Fine Arts, Poetry, University of Montana, Missoula, Montana, 2004
Master of Arts, Literature, University of Montana, Missoula, Montana, 2004

Dissertation

presented in partial fulfillment of the requirements
for the degree of

Doctorate in Curriculum & Instruction

The University of Montana
Missoula, MT

May 6, 2015

Approved by:

Sandy Ross, Dean of The Graduate School
Graduate School

David R. Erickson, Co-Chair
Curriculum & Instruction

Beverly A. Chin, Co-Chair
English

Jessica R. Gallo
Curriculum & Instruction

William P. McCaw
Educational Leadership

Kathleen J. Ryan
English/Composition and Rhetoric

Ratto Parks, Amy, Ed.D., Spring, 2015 Curriculum & Instruction

The Power of Critical Reflection: Exploring the Impact of Rhetorical Stories on Metacognition in First-Year Composition Courses.

Co-Chairperson: David R. Erickson
Co-Chairperson: Beverly A. Chin

Abstract

National Council of Teachers of English, The Council of Writing Program Administrators, and The Common Core State Standards Initiative all emphasize the importance of metacognitive skills in the writing classroom, but there is very little research about the effects of specific metacognitive interventions. Although reflective writing is often linked to metacognition, there is little clarity about its specific impacts on writing ability, and while many researchers have studied the relationship between thinking and writing, we still lack a clear understanding of the relationship between metacognitive growth and writing.

The purpose of this quasi-experimental study was to explore the impact of pedagogical intervention – the rhetorical story praxis – on metacognitive growth of students in a First Year Composition (FYC) course. The study analyzed portfolio introductions and other less formal reflective artifacts from students and teachers. Portfolio introductions were analyzed using the Index for Metacognitive Knowledge in Critical Reflective Writing (IMK). Created by the researcher, the IMK is the first index of its kind because it translates metacognitive discourse into rhetorical discourse in order to allow teachers to observe, describe, and assess metacognition in writing. Inter-rater reliability testing on the IMK showed that it is highly reliable; the Fleiss' kappa was 83% (K=.834).

Pretest data showed that all students involved began the semester at the same level of writing proficiency. Analysis of end-of-semester portfolio introductions showed that 46% of the students in the experimental group and 0% of the control group demonstrated strong metacognitive knowledge. The quality of writing in the portfolio introductions was scored based on the University of Montana UPWA Holistic Rubric. The average writing score for the control group was 2.7 (Nearing Proficiency) while the experimental group was 3.4 (Proficient).

The results of this study show that the IMK is a highly reliable index that will be invaluable for future research into metacognition and writing. The results also show that students who were taught using the rhetorical story praxis showed significant gains in metacognitive complexity and improved writing ability. Their writing demonstrated stronger, more balanced distributions of metacognitive knowledge, which predisposes them to improved learning transfer.

Dedication

This entire lifespan of this dissertation is dedicated to my husband, Russell Parks, who has tirelessly supported my doctoral work as well as my artistic and scientific imaginations. A work of this size is many years and many, many hours in the making. Thank you, Russell, for the time, solitude, energy, and love.

Acknowledgements

I owe a great debt of gratitude to many people who have taught me what it means to be a researcher and an academic writer, and who have helped me navigate this doctoral path. I would like to thank David Erickson for agreeing to work with me when my idea for this project was only a tiny, seed-like speck. His energy and mentorship taught me not only how to see my own inquiries through a methodological lens, but how to prepare and present them for audiences.

I would like to thank Beverly Chin for her friendship, mentorship, and guidance, as well as her endearingly compassionate, optimistic view of scholarship, teaching, and academic life. I learn daily from her intelligent, patient leadership.

I would like to thank Jessica Gallo for agreeing to leap into this team of readers at a moment's notice, for bringing such sharp questions and ideas to the work.

I would like to thank William McCaw for his extensive knowledge of qualitative and quantitative research methods and his exacting editorial eye.

I would like to thank Kathleen Ryan for being the first person to introduce me to the worlds of Composition and Rhetoric, for being my first mentor in writing program administration, and for showing me the power that lives within curricula. Dr. Ryan also created the portfolio introduction assignment upon which the assignment used here is based.

I would like to thank the teachers and scholars who collaborated with me and offered invaluable feedback on my work: Natalie Peeterse, Claire Hibbs-Cheff, Kelly Webster, Jake Hansen, and Pina Tarricone. Finally, I would like to thank the Department of English, the Department of Curriculum and Instruction, the University of Montana's Provost's Office Student Travel Fund, and the Conference on College Composition and Communication for financially supporting my travel to present my research in conference presentations.

Table of Contents

List of Tables

List of Figures

Chapter One: The Problem

In 2004, The National Council of Teachers of English (NCTE) published a position statement titled "Beliefs about the Teaching of Writing" which states that in order for students to develop knowledge about writing, they must develop "reflective abilities and meta-awareness about writing" (www.ncte.org/positions/statements/writingbeliefs, ¶ 9). The Beliefs Statement goes on to say that, among other things, teachers must understand "ways of assessing student metacognitive process of the reading/writing connection" in order to excel at writing assessment (www.ncte.org/positions/statements/writingbeliefs, ¶ 60).

The NCTE executive committee's stance on meta-awareness and metacognition was undoubtedly rooted in the growing research about the relationship between metacognition and academic performance. Results of recent studies show that metacognitive skills correlate closely with a wide variety of other topics of educational interest: personal agency, self-control, intrinsic motivation, executive function, self-concept, and self-regulated learning (Hacker, Dunlosky, & Graesser, 2009). In addition, the most recent outcomes written by other influential educational bodies such as The Common Core State Standards Initiative (corestandards.org), and Council of Writing Program Administrators (wpacouncil.org) echo NCTE's emphasis on the importance of metacognitive skills and demonstrate a shared belief in its importance.

The collective support of these organizations is important because it means that a wide variety of attentive teachers and administrators—from K-12 Language Arts teachers, to Writing Program Administrators, to teachers of First Year Composition—are

hearing a unified message about the importance of metacognitive skills. Unfortunately, that is where the clear message ends and these teachers and administrators are often left with concrete objectives, but hazy or uninformed strategies for implementation and assessment. Although there are many resources available, there is very little consensus about how *exactly* to create a curriculum or learning environment that fosters metacognitive growth, and there is still less research about the impacts of specific educational interventions (Tarricone, 2011).

One reason that strategies for teaching and assessment have been scarce, especially in higher education, is that metacognition is a very complex, many-faceted concept; researching and analyzing the educational impacts can send one down a veritable rabbit hole (Tarricone, 2011). Luckily for Language Arts teachers, writing program administrators, and teachers of college composition, there is a vital area of agreement between researchers in writing and metacognition: they agree that one way to improve metacognition is to practice reflection. Tarricone (2011) described the relationship between reflection and learning. She wrote that that learners must be able to access deep knowledge gained through memory and experience in order to marshal appropriate strategies in new problem-solving contexts. The process of accessing that knowledge only happens through reflection. Reflection can be an experience of private, wandering introspection, but in order for it to serve a learner, it must be "focused and applied" (p. 43).

Tarricone (2011) further added that verbalization, whether aloud, in informal or formal writing, is an important part of the constructive reflective process. She wrote, "Reflection including verbalization is essential for the development of metacognitive

strategies and the monitoring and regulation of these strategies, especially in complex problem-solving contexts" (p. 27). In essence, Tarricone showed that metacognitive researchers have found that critical reflection is vital to developing skills in agency, higher-order thinking, and problem-solving (Tarricone, 2011). Critical reflection helps the student retrieve stored knowledge about tasks and strategies, and it helps develop the kind of self-knowledge required for strong problem-solving skills (Tarricone, 2011).

Yancey (1998) argued for the inclusion of specific kinds of reflection. She defined reflection as "the process by which we know what we have accomplished and by which we articulate accomplishment" (Yancey, 1998, p. 6). Yancey said that when students practice reflection-in-action, they "think critically about the thinking that got [them] into this fix or this opportunity; and [they] may, in the process, restructure strategies of action, understandings of phenomena, or ways of framing problems" (p. 24). However, after outlining the many benefits and uses of critical reflective work, and despite her clear and informed belief in the importance of reflection, she goes on to say that "*the function of reflection in an assessment context isn't entirely clear*" (p. 145) and concludes, "no one really knows what we reward in reflection" (p. 147).

This study sought evidence about the metacognitive effects of specific pedagogical interventions that Tarricone (2011) and Yancey (1998) recommended. The study involved one specific pedagogical intervention, the rhetorical story, as well as the development and testing of an index for assessing metacognitive knowledge in students' critical reflective work. This research grew out of a desire to help teachers meet their educational outcomes. Right now ambitious teachers can find many diverse ideas about teaching metacognitive skills (a Google search for "metacognition in education" results

in over half a million hits), but they have very few tools for deciding which ideas to engage. In a time when conversations about educational hours, standardized testing, and teacher compensation are heated, many teachers are hesitant to integrate new objectives into their already-packed curricula (Bean, 2011). Teachers know they need to develop classrooms and curricula that foster metacognitive growth, but they need the empirical evidence to show that the extra work is worth their—and their students'—time.

Problem Statement

The process of converting thought into the written word has mystified researchers in the fields of education, psychology, philosophy, and writing studies (Hacker, et al., 2009). Writing is a highly symbolized and culturally influenced process; in order to write well, a person must be able to negotiate many different tiers of social, cultural, and academic expectations (Bartholomae, 1985/2011). However, even though a short piece of writing could involve a nearly infinite number of possible decisions in diction, syntax, tone, voice, arrangement, and development, most people do not write with a sense of decision-making (Flower & Hayes, 1981/2011). Instead, Berthoff (1990) says that, like riding a bicycle, writing is a collection of executed sub-skills happening all at once. She argues that the "allatonceness" of writing is a collection of many small decisions, behaviors and actions made in response to the writer's rhetorical situation (Berthoff, 1990, p. 86).

Cognitive models of the writing process have sought to establish a roadmap for the "set of distinctive thinking processes" (Flower & Hayes, 1981/2011, p. 254) involved in writing (Fleckenstein, 2012; Flower & Hayes, 1981/2011). Many writing researchers have shown that writing is an inherently recursive process; that despite what many people

report, they do not just sit down and write something in a linear fashion from beginning to end (Berthoff, 1984/2011; Murray, 1972/2011; Sommers, 1980/2011). Instead, all writers, no matter how successful they are, engage in a series of many recursive loops between thinking, planning, writing, and revising (Berthoff, 1984/2011; Emig, 1971; Murray, 1972/2011; Sommers, 1980/2011).

Cognitive models have successfully offered important insight into the writing process. However, some scholars have argued that these models are still somewhat limited (Berthoff, 1984/2011; Fleckenstein, 2012). Fleckenstein (2012) writes that the critics of the cognitive models had two major objections. They "questioned the foundational premises of the model: Is writing a species of problem solving?" (p. 89). Fleckenstein goes on to show that Berthoff also argued "a problem solving approach strips away from the writing the formative power of imagination, reducing writing to manipulation, rather than creation" (Fleckenstein, 2012, pp. 89-90). Critics also posited that the cognitive models have left out "emotions, bodies and other elements of the nonverbal" (Alice Brand, as cited in Fleckenstein, 2012, p. 90).

The limitations in the theories of cognitive models of writing have led to a call for a more complex model that incorporates these internal authorial questions. Fleckenstein (2012) describes an eco-cognitive paradigm. Recalling Paulo Freire's pedagogy of knowing, Berthoff (1984/2011) argues, "until the mind of the learner is engaged, no meaning will be made, no knowledge can be won" (p. 310).

Metacognitive researchers focus entirely on the mind of the learner; in particular, they are interested in the learner's awareness of his or her own engagement of the mind's processes. The field of metacognitive research includes a wide range of topics closely

related to academic success such as: self-control, intrinsic motivation, executive function, self-concept, self-regulated learning, and motivation (Hacker, Dunlosky, & Graesser, 2009). Cognitive researchers seek to map the thought processes that lead to writing, while metacognitive researchers hope to understand the importance of the learner's own awareness of his/her thoughts, beliefs, and actions. Williams and Atkins (2009) write that metacognition is composed of knowledge and awareness of cognitive processes as well as the ability to control the cognitive processes.

It is the awareness of and the ability to observe and control the cognitive process that interests researchers who study metacognition and writing studies. Thinking and writing are closely tied (Bean, 2011). One cannot write something s/he has not thought and often the complexity of a thought exceeds the author's writing skills. Metacognition is so closely tied to writing that Hacker, Keener, and Kircher (2009) argue "writing *is* applied metacognition" (emphasis added, p. 154). Hacker, Keener, and Kircher define *writing* as "the production of thought for oneself or others under the direction of one's goal-directed metacognitive monitoring and control, and translation of that thought into an external symbolic representation" (p. 154).

The current cognitive models cannot explain the larger context of an author's writing choices, nor can it engage the emotive, personal, or creative impacts (Fleckenstein, 2012), but metacognitive research can (Negretti, 2012; Smith, 2010). The main problem is that we do not have a metacognitive model of the writing process. Researchers do not know what metacognitive growth looks like in writers. Cognitive models show us what writers *do*. A metacognitive model will help expose the thinking behind the actions, or as Bruner (1991) says, it would show the "Self *and* its doings"

(emphasis added, p. 66). In order to move toward a pedagogy of knowing (Berthoff, 1984/2011) we need to understand the way students' metacognitive abilities relate to their writing processes.

Purpose of the Study

Understanding the thinking that leads to writing is complicated and sometimes even hidden to the writer herself (Ballenger, 2012). However, if students are regularly asked to write about their thinking, and teachers respond to their reflective work, many can come to develop reflective habits of mind (Yancey, 1998) that lead to improved metacognition (Tarricone, 2011). The purpose of this study was to explore the impact of one method of assigning and responding to critical reflective work – the rhetorical story praxis – on metacognitive growth of students in a First Year Composition (FYC) course, College Writing 1, during a 16-week semester.

Research Questions

The exploration in this study was guided by two research questions. The first research question was, what, if any, are the differences in metacognitive complexity between students who have learned to write rhetorical stories and students who have not? The second research question was, what does metacognitive development look like in student writers?

Definition of Terms

For the purposes of this research study, the following terms will be defined:

Critical reflection: "Critical reflection is an inductive process based upon presuppositions, beliefs and experiences, involving critical assessment, knowledge and

assumptions which form the basis of these beliefs" (Tarricone, 2011, p. 28). In this research, critical reflection is reflective writing that is prepared outside of class and is written for an outside audience (such as the teacher).

First Year Composition. Abbreviated FYC, it is a type of writing course designed to introduce students to college level writing. FYC is "at most schools a required general education course of sequence of courses" (wpacouncil.org, ¶ 1). In this study, the FYC course is called College Writing 101.

Metacognition: According to Sigmund Tobias and Howard T. Everson, "metacognition is defined as one's ability to monitor, evaluate, and make plans for one's learning" (as cited in Hacker, Dunlosky & Graesser, 2009, p. 107). They divide this into three parts: 1) knowledge about metacognition, 2) the ability to monitor one's learning process, 3) the meta-ability to control the learning processes (Hacker, Dunlosky, & Graesser, 2009, p. 107).

Portfolio: A type of writing and performance assessment tool popular in contemporary FYC curricula. Most portfolio assignments rely upon critical reflective writing as a means of assessing the students thinking about his/her own thinking, writing, revision, and research processes (Reynolds & Rice, 2006).

Reflection: "The process by which we know what we have accomplished and by which we articulate accomplishment" (Yancey, 1998, p. 6).

Rhetorical story: A specific critical reflective writing assignment completed alongside a formal essay (e.g., research paper or personal argument). The rhetorical story asks students to reflect on 1) the nature of the writing situation of the formal essay assignment, 2) their role as writers in the particular writing situation of the formal essay

assignment, and 3) the strategies they have employed in order to meet the demands of the formal essay's writing situation (Appendix A).

Delimitations

This study was limited to college students enrolled in the selected sections of College Writing I. The students must complete the initial writing assignment, portfolio, and portfolio introduction (Appendix B) in order to be included in the study. The available sections of College Writing I were limited to sections taught by second year teaching assistants who were graduate students in the Department of English. The instructors of both the experimental and control groups were experienced teachers, followed the same departmental curriculum, and assigned the same major assignments. Every effort was made to align the characteristics of the control and experimental groups in terms of course time of day, length of class period (50 or 75-minute meetings), and teaching background.

Limitations

Limitations are inherent in any form of research, and it is therefore important that researchers acknowledge and understand these limitations before analyzing or reporting their research. One limitation in this study is that the researcher is the Interim Director of the FYC program (the College Writing I courses). This means that the teachers of the selected classes were also under the researcher's direct supervision and would have a clear interest in performing in a way that meets the supervisor's expectation. In order to compensate for the effects of these limitations, the researcher took four actions. First, the researcher offered all of the teachers the opportunity to pilot the rhetorical story in their classes. Although there would be only one experimental group, other teachers had the

same opportunity to participate in the new curriculum. Second, in the formal IRB consent forms, the researcher made it clear that the teachers' participation in this research was entirely voluntary. Third, the researcher removed all identifying markers on the writing samples before coding and analyzing the samples. Fourth, the researcher did not read or review any of the written artifacts (from the students or from the teachers) until after the course had ended.

Significance of Study

In the past ten years, researchers have shown increasing interest in the relationship between metacognition and academic performance. Results of recent studies show that measuring metacognition could be extremely fruitful to educators because it correlates closely with a wide variety of other topics of educational interest: personal agency, self-control, intrinsic motivation, executive function, self-concept, and self-regulated learning (Hacker, Dunlosky, & Graesser, 2009).

This collection of traits connected with strong metacognition is important to a robust learning identity and strong academic performance, but it is also connected with something much larger: the basic tenants of an effective liberal arts education. Cronon (1998) writes that a liberal arts education "aspires to nurture the growth of human talent in the service of human freedom.…Liberally educated people have been liberated by their education to explore and fulfill the promise of their own highest talents" (p. 1). In an era when the liberal arts are suffering because of their perceived lack of utility or long-term career practicality, understanding metacognitive growth could help the long-term significance in the humanities, which are generally reading, writing, and research intensive. This research could be an important step in being able to track, and later

possibly quantify, the increasing depth and complexity of students' metacognitive skills in a writing course. Ultimately, it could be used to understand further the deep practicality and long-term impacts of a liberal arts education.

Summary

Learning about students' metacognitive skills is of vital importance. While the study of metacognition reaches into the fields of psychology, human performance, and literacy, (Hacker, et al., 2009) its transferability between subjects and situations makes it quite globally important for educational researchers. In the following chapter, the review of literature will discuss the major texts and studies that have fostered the development of the current understanding of metacognition and writing.

Chapter Two: Review of Literature

The review of literature serves many important purposes in the field of educational research. Boote and Beile (2005) argue that the review of literature is "the foundation and inspiration for substantial, useful research" (p. 3) because it demonstrates the researchers' awareness of and familiarity with the important studies with which her own research is in conversation. There is no study that is born out of a research vacuum, no matter how unique or necessary it is. Rather, any question we can endeavor to explore has its roots in the long history of research; the review of literature demonstrates a researcher's awareness of her place in that long and often contentious conversation.

Researchers in the fields of metacognition and writing studies seek to understand the ways learners understand, conceptualize, and strategize in basic or complex problem solving situations. Researchers in both fields understand that a learner's ability to reflect predisposes her to an ability to problem-solve. They each seek to better understand the way learning can be structured to improve critical thinking and problem solving, and acknowledge that a sense of personal agency is intimately connected with self-knowledge, awareness, and control of cognition (Negretti, 2012), and the ability to understand and express what we know. Researchers in these fields know that students can learn to understand themselves, conceptualize a problem-solving task, and engage appropriate strategies, and that scholars and teachers play an important role in students learning these vital, transferable academic skills.

Metacognition and Writing Studies

Research about metacognition in the writing classroom requires a review of the major fields of metacognition and writing studies. Although each of these disciplines is quite sweeping in its own variety of scholarly interests, researchers in the two disciplines are in conversation with each other on many important topics. A review of the relevant literature shows that both fields have significant bodies of research dedicated to the following four topics: the relationship between writing and critical thinking (Bean, 2011; Belanoff, Elbow, & Fontaine, 1991; Berthoff, 1984/2011), the relationship between student agency and academic success (Elbow, 1998; Freire, 1970; Hacker, Dunlosky, & Graesser, 2009; hooks, 1994), the concept of mental recursivity as an important academic habit (Emig, 1983; Flavell, 1976; Flower & Hayes, 1981/2011; Freire, 1970; Sommers, 1980/2011; Yancey, 1998), and the difficulty of assessing metacognitive and writing skills (Hacker, Dunlosky, & Graesser, 2009; Huot & O'Neil, 2009; Russell & Airasian, 2012; Tarricone, 2011; White, 2007).

The goal of this review of literature is to synthesize the important works in metacognition and writing studies and to demonstrate not only the places where the researchers are in conversation with each other, but also the places where the research in each respective field could augment understanding or practice in the other. The works presented here are generally limited to research and writing about adult student writers (18 years or older) in collegiate settings. In some places research has been included about children or high school students either because the work is a primary foundational study and/or because there is no other work available and the cited work informs the current research.

The Conceptual Crossroads

This research is concerned with the intersection of the fields of metacognition and writing studies. Both of these field include their own long, complex histories that include a vast array of subjects that are unrelated to one another. Metacognitive researchers generally operate in the disciplines of Psychology or Educational Psychology and explore topics such as meta-memory, the relationship between memory and learning, metacognitive monitoring, and metacognitive control. Researchers in rhetoric and writing studies generally operate in the disciplines of English or Communications and explore the relationship between culture, power, language, and learning. While both of these fields have researchers exploring the subtleties of the implications of their theoretical frameworks, the theoretical premise for putting these two disciplines in conversation with each other resides in some of their most basic concepts.

Rhetorical constructs are at the intersection of the fields of writing studies and metacognition because they offer us the most clear illustration of the overlap between the way metacognitive theorists and writing researchers conceptualize potential learning situations. Both fields begin with the basic understanding that learners need to be able to respond to novel learning situations and both fields have created terminology to abstractly describe the characteristics of those situations. Metacognitive theorists describe those learning situations as "problem-solving" situations; they say that in order for a student to negotiate the situation well, she needs to understand the relationship between herself, the task, and the strategies available for the task. The three kinds of problem-solving knowledge – self, task, and strategy knowledge – form an interdependent, triangular relationship (Flavell, 1979). All three elements are present in any problem-

solving situation and a change to one of the three requires an adjustment of the other two (i.e., if the task is an assignment given to the whole class, then the task will remain the same; however, since each student is different, each student will need to figure out which strategies will help him or her best accomplish the task).

The field of writing studies describes these novel learning situations as rhetorical situations. Similarly, the basic framework for the rhetorical situation is comprised of three elements—the writer, the subject, and the audience—that form an interdependent relationship (Rapp, 2010). Writers then make strategic choices based upon their understanding of the rhetorical situation (see Figure 1). In order for a writer to negotiate

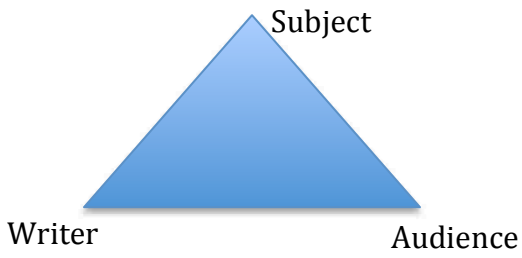


Figure 1. The rhetorical situation.

his rhetorical situation, he must understand his own relationship to his subject and to his audience, but he also must understand the audience's relationship to him and to the subject. Once a student understands these relationships, or understands his rhetorical situation, he can then conscientiously choose his persuasive strategies; in the best-case scenario, a student's writing choices and persuasive strategies are based on an accurate assessment of the rhetorical situation. In writing classrooms, a student's understanding of

the rhetorical situation of his writing assignment is one pivotal factor that allows him to make appropriate persuasive choices (see Figure 2).

Theorists in metacognition and writing studies both know that students must be able to understand the elements of their particular situation before choosing strategies for negotiating the situation. Writing studies theorists call this understanding the rhetorical

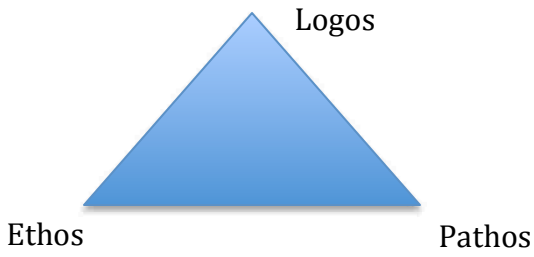


Figure 2. Aristotle's persuasive strategies.

situation while metacognitive theorists call it task knowledge, and this is where two fields come together: the rhetorical situation of a writing assignment is *a particular kind* of problem-solving task (see Figure 3).

Evolving Metacognitive Frameworks

The contemporary conversation about metacognition began in the early 1970s when Flavell (1970) began researching memory and problem-solving strategies in small children. His articles positioned him to coin the term *metacognition* as, "one's knowledge concerning one's own cognitive processes and products or anything related to the, e.g., the learning-relevant properties of information or data" (Flavell, 1976, p. 232). He goes

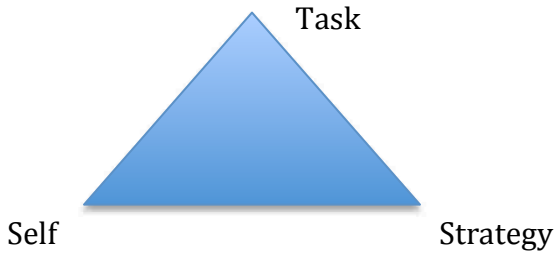


Figure 3. The metacognitive triangle describes the elements of problem solving.

on to add that it refers to, "the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective" (p. 232).

Although the definition of metacognition (Flavell, 1976) is commonly referenced (Harris, Graham, Brindle, & Sandmel, 2009; Schraw, 2009; Serra & Metcalf, 2009; Tobias & Everson, 2009; Williams & Atkins, 2009) as the beginning of a philosophy of metacognition and the catalyst for research into metacognition, it is interesting to note the chapter defining metacognition itself is quite short – roughly only five pages – and much of that time is spent arguing against Resnick and Glaser (1976), the authors of the chapter preceding his in the text. Although Flavell (1976) concedes that the study of problem solving is important (since it is also his field of research), he offers Resnick and Glaser five "priceless suggestions" about "the conduct of [their] future research" (p. 234). He first suggests that they keep their "goals clear and specific" because some of their reported work has been "at least a bit tangential" (p. 234). He then argues that they should stop being "so exclusively oriented toward external behaviors and external

environments" (p. 234). Third, he warned them against a cognitive model that would reduce the scope of how researchers could view cognitive function. He wrote, "I suspect that a lot of human thought, even in problem-solving situations, may be erratic and inconsistent in direction, subject to multiple embedded interruptions and detours, and generally replete with vague, difficult-to-model ideas" (p. 234). Fourth, he advises the researchers to research problem solving in less "school-like" and more "ethological-ecological" situations, and finally, he offers them some future reading.

Even though Flavell (1976) is writing to cognitive psychologists, the clear contentiousness presented in this article is important to the conversation about metacognition in the writing classroom because it foresees the underpinnings of many of the major pedagogical questions about writing theory and praxis (Freire, 1970). Flavell is arguing for a more holistic approach to viewing problem solving. He is in search of "useful data on the child's plans and their enactments" and wants children to "become self-conscious about their strategies and objectives" (p. 235). He worries, like many writing studies theorists to come, about conflating "information-processing type flow diagrams and cognitive reality" (p. 234); later writing theorists will call this over-simplification of the cognitive processes "cognitive reductionism" (Rose, 1988/2011, p. 235). Flavell argues against the reliance on external products of performance in favor of trying to find out what is "running through the child's mind as he or she wends his or her way through a task" (p. 234). His interest in the chaos of the mind would be echoed in later years by Belanoff (1991) and Berthoff (1981, 1982), and Elbow (1998). Finally, and perhaps most importantly, he is arguing for process and product rather than just product;

and he is arguing for an embodied mind trying to create *meaning*, rather than a disembodied mind generating *information*.

The work of Flavell (1976) lead to two more groundbreaking and influential works, Flower and Hayes (1981/2011) and Bereiter and Scardamalia (1987). These works pursued the cognitive models of the writing process with methodologies and philosophies similar to Resnick and Glaser (1976) and further deepened and complicated the theoretical divide between writing process and written product, and between the disembodied mind and the embodied, historicized, culture-bound writer.

Beginning Conversations about Thinking and Writing

Flower and Hayes (1981/2011) conducted one of the first studies to attempt to explore and theorize the "series of decisions and choices" (p. 253) older writers make while composing. Flower and Hayes formed a disciplinary partnership that makes their work particularly relevant to this research. Flower is a rhetorician and Hayes is a psychologist, and their study is reviewed here in thorough detail because it is a study that is widely cited in both metacognitive and writing studies research and because their research subjects were adults.

In an attempt to study the "inner processes of decision and choice" (p. 253) that move a set of ideas into a written text, Flower and Hayes (1981/2011) modeled their methods on other cognitive research methods and used protocol analysis to track and record the participant's unfolding thinking while writing. They gave the writers a "problem," such as "Write an article on your job for readers of Seventeen Magazine" and then "asked them to compose out loud near an unobtrusive tape recorder" (p. 257). They asked them to compose as they normally would, except that they "must think aloud. They

were asked to verbalize everything that goes through their minds including stray notions, false starts, and incomplete or fragmentary thought" (p. 257). The recordings were then transcribed and, alongside the notes and written compositions, studied in order to understand the "intellectual processes" (p. 257) that produced the work.

The cognitive process model they developed included three major elements: the task environment, the writer's long-term memory, and the writing processes. The task environment was the "rhetorical problem of the assignment" (p. 257), the long-term memory included "stored knowledge, not only of the topic itself, but of the audience and of various writing plans" (p. 257), and the writing processes were the processes of "Planning, Translating, and Reviewing, which were under the control of a Monitor" (p. 257). Together, these elements composed their cognitive model.

Flower and Hayes (1981/2011) cognitive theory was based on four main ideas. The first main idea was, "the process of writing is best understood as a set of distinctive thinking processes which writers orchestrate during the act of composing" (p. 254). This first main point makes an argument for recursivity in the writing process. Previous to and during this time in composition theory history, the stage model process – a model that saw composing as a "linear series of stages, separated in time, and characterized by gradual development of the written product" (p. 255) – was dominant. A basic example of the stage model process is pre-writing, writing, re-writing, or the belief that composing involved thinking of an idea, writing it, then revising it. Flower and Hayes' study reinforced similar findings made by Sommers (1980/2011) and Emig (1971).

The second main idea further compounded the first main idea: "these [writing] processes have a hierarchical, highly embedded organization in which any given process

can be embedded within any other" (Flower & Hayes, 1981/2011, p. 254). Not only is the process recursive rather than linear, but it is deeply so. The basic writing processes of planning, translation, and review "should be viewed as the writer's toolkit" (p. 265); any tool may be used at any time rather than in a specified order. The hierarchical, embedded process is "powerful because it is flexible" (p. 265) and means that "revision" is not a stage, but a "thinking process that can occur at any time a writer chooses to evaluate or revise his text or his plans" (p. 265).

The third and fourth main ideas involved the importance of goal setting (Flower & Hayes, 1981/2011). The third main idea – what they describe as the "keystone" (p. 266) of their cognitive theory – is that "the act of composing itself is a goal-directed thinking process, guided by the writer's own growing network of goals" (p. 254). The writer's goals can be "inclusive and exploratory or narrow, sensitive to the audience, or chained to the topic, based on rhetorical savvy, or focused on producing correct prose" (p. 268). Flower and Hayes also add that "this does not mean that a writer's goals are necessarily elaborate, logical, or conscious" (p. 268), but that the logic "which moves composing forward" (p. 269) is based in a writer's developing, and often shifting, sense of purpose.

The fourth main idea built on the third is that "writers create their own goals in two key ways: by generating both high-level and supporting sub-goals which embody the writer's developing sense of purpose, and then, at times, by changing major goals or even establishing entirely new ones based on what has been learned in the act of writing" (Flower & Hayes, 1981/2011, pp. 254-255). Flower and Hayes (1981/2011) explained that although some of these goals are rooted in the writer's own past and stored in long-

term memory (e.g., “start with an introduction” (p. 271)), there are also three typical goal-setting patterns writers engage and develop while writing: “explore and consolidate, state and develop, and write and regenerate” (p. 271).

Impacts on writing studies.

The implications of their cognitive model were important. Emig (1971) and Sommers (1980/2011) researched young writers and basic writers, while Flower and Hayes (1981/2011) research was based on advanced adult writers. Flower and Hayes’ study also gave other researchers and teachers more support for the argument that writing process is both predicable and unpredictable at the same time. They showed that even though there are predictable processes or tools writers use, it is difficult to teach in a way that supports them in their own recursive thinking processes and their individual iterations of goal setting. Flower and Hayes explored this question further by asking, “How, then, does the writing process manage to seem so unstructured, open-ended, and exploratory (‘I don’t know what I mean until I see what I say’) and at the same time possess its own underlying coherence, direction, or purpose” (p. 266)?

Metacognitive implications.

Although they do not directly mention metacognition, Flower and Hayes (1981/2011) addressed recursivity, flexibility, the mental monitor, and a writer’s intentions, foundations for much of the contemporary research on metacognition and learning (Hacker, Dunlosky, & Graesser, 2009). Of these things, however, their emphasis on the importance of goal setting places them in direct conversation with the contemporary research in the field. Flower and Hayes found that the learner’s relationship to goal setting was integral to his ability to negotiate a writing situation. It is

important to note here, that Flower and Hayes are also in agreement with metacognitive researchers in their consideration of writing as a problem-solving situation. Researchers in the field of writing studies such as Berthoff (1984/2011), Fleckenstein (2012), and others (Bartholomae, 1985/2011; Elbow, 1998; Murray, 1972/2011) consider the writing situation to be more than a problem-solving situation. These researchers worry that defining writing only as a problem-solving situation negates the positionality of the writer as well as the "formative power of imagination, reducing writing to manipulation, rather than creation, of information" (Fleckenstein, 2012, p. 91).

The discussion of Flower and Hayes (1981/2011) on goal setting was extensive and important. Their research advanced three major understandings about the relationship between goal setting and the writer's cognitive function. The first major understanding was that "people only solve the problems they define for themselves" (p. 259) and that the "goals are created by the writer" (p. 261). This means that if a writer does not understand her writing situation or miscalculates the expectations of her audience or the assignment, then she could easily pursue goals that will lead her down unproductive writing paths. Flower and Hayes write that "as long as the representation fits reality" (p. 259) the goal setting will work for the writer. This leaves a lot of room for error, especially in terms of reading comprehension and the complex social ability to negotiate the academic community (Bartholomae, 1985/2011). This means that if an assignment sets a goal that is too far beyond the student's comprehension or ability, she might just unconsciously revise it in order to make the task something she can complete; she might even revise it so heavily that it seems that she has ignored it. However, they also found

that writers revised their goals as the writing process progressed. Flower and Hayes wrote,

> The remarkable combination of purposefulness and openness which writing offers is based in part on a beautifully simple, but extremely powerful principle which is this: In the act of writing, people regenerate or recreate their own goals in the light of what they learn. (p. 270)

The second major understanding Flower and Hayes (1981/2011) offer is that some goals and actions are not conscious. They explained that even though the "fruits of discovery" (p. 276) can only be found through goal setting, "this does not mean that the writer's goals are necessarily elaborate, logical or conscious" (p. 268). This means that while writers are always directed by goals, the goals can be simple, might not always make sense, and the writer herself might not even know that they are the goals she is operating with. They cite Sondra Perl's observation that weaker writers will tend to return to the assignment over and over again, looking for goals to be set for them rather than trying to translate the writing goals into their own achievable set of intentions. They also found that "well-learned skills, such as sentence construction, tend to become automatic and lost to consciousness" (p. 262). This means that if a student has automatic writing habits and that are not serving her well, then the role of the teacher needs to bring those habits back into consciousness.

The third understanding that resulted from their research was that the thinking processes of strong writers differ from those of basic writers. This finding supported and elaborated upon by previous important studies by Sommers (1980/2011) and Emig (1971) among others. Flower and Hayes (1981/2011) found that "good writers … have

greater conscious control over their own process than the poorer writers we have studied" (p. 266). This understanding makes sense in a problem-solving paradigm; learners who are more reflective are better adept at solving problems because they are better able to refer to the well of knowledge and experience they have accumulated (Tarricone, 2011). Flower and Hayes elaborate here on the nature of the writer's attention: "The writer's abstract plan … of his goals, his knowledge of the topic, and his current text are all actively competing for the writer's attention" (p. 269). In this case, the stronger writers are more aware of the scope of the task expectations, their possible strategies, and the fact that there could be one or more possible strategies to engage.

Contextual analysis

Flavell (1976) criticized his colleagues for operating solely on external product. Did Flower and Hayes (1981/2011) listen to the advice or fall into the same trap? It seems like they learned from the advice: they did not rely completely on external product, but instead the bulk of the research was devoted to their protocol analysis. Flower and Hayes argue that protocol analysis is better than introspective analysis because with introspective analysis, responses are often colored by "their notions of what they should have done" (p. 257). Their protocol analysis asked participants to describe what they were doing as they were doing it – to voice all of their thinking aloud. But it is impossible to voice all of our thinking aloud (Belanoff, Elbow, & Fontaine, 1991; Berthoff, 1984/2011). Just as with writing, there are always decisions being made about which thoughts or ideas to attend to, given the complexity of the restraints of the rhetorical situation at hand (Vygotsky, 2012).

Flower and Hayes (1981/2011) explore this complexity early in their article, but do not seem to connect it to the responses of their participants. They seem to accept the responses of their writers as the entirety of the thought-processes, but we know that cognition is messier than that (Kreutzer, Leonard, & Flavell, 1975). A more realistic protocol analysis of weaker writers (a criticism advanced by Fleckenstein, 2012) would either show a messy, chaotic stream of thought including mentions of things wildly unrelated to each other or to the assignment (if the respondent were more mature), or a complete silence of report (if the respondent were a novice) (Belanoff, Elbow, & Fontaine, 1991). This is because the stronger writer will understand that the chaos of thought is natural (Belanoff, Elbow, & Fontaine, 1991; Fleckenstein, 2012; Moffett, 1967/2006) and that she need only work through it. The novice writer will not understand that this kind of thinking is natural and will worry that she is distracted or off-task; this writer is more likely then, to not say anything to a researcher, because she would decide that her ideas were not relevant (Belanoff, Elbow, & Fontaine, 1991).

Although the results of the cognitive work conducted by Flower and Hayes (1981/2011) profoundly impacted the scholarly understanding of the cognitive functions of writing, it also raised new questions and left plenty of room for future research. One of the main spaces left open in their work is that it considers only the intellectual processes of the composing processes of highly skilled writers; it does not consider the wide variety of factors that impact the intellectual processes. Other scholars have asked questions like: What does the writing process look like in basic writers (Emig, 1983; Sommers, 1980/2011)? How do emotion and creativity impact composing (Berthoff, 1982; Elbow, 1998; Fleckenstein, 2012; Shaughnessy, 1977)? How does a teacher's response to the

work impact the student's composing process (Anson, 1999/2006; Connors & Lunsford, 1993/2006; Moffett, 1967/2006; Stiff, 1984/2006)? How do culture, history and power impact student agency and authority in composing (Bartholomae, 1985/2011; Flynn, 1988/2011; Freire, 1970; hooks, 1994)?

The results of the research conducted by Flower and Hayes (1981/2011) deeply influenced the scholarly perspective about the writing process and helped move it away from the linear model (Becker & Horning, 2006), and it gave future scholars a model to work with or push against. It remains a vital study and continues to be cited in contemporary research.

Writing, Thinking, and Habits of Mind

As cognitive research made clear, writing cannot happen without thinking, even though the thinking is often hidden within the writing. However, reflective work is one genre of writing in which the writer explicitly attempts to make his thinking clear in writing. Yancey (1998) wrote the seminal text on the direct consideration of the role of reflection in the college writing classroom. Her preface begins with this question: "What conversation could we have around texts to foster reflective habits of mind" (p. vi)? Yancey's introduction to the concept of reflection as well as her predecessors in the field, her concepts of reflection-in-action and reflection-in-presentation, and her discussion of reflection and assessment all inform this research and will be carefully considered.

In wondering about conversations we could have to foster reflection, Yancey (1998) wonders "What conversation could we have around texts to foster reflective habits of mind? (p. vi). references Emig (1971) and Flower and Hayes (1981/2011) as building blocks for her work. She continues, however, by saying that despite these earlier studies,

"reflection has played but a small role in this history of composing" (p. 4) and that at the time, just Pianko (1979) "link[ed] reflection and the composing process" (Yancey, 1998, p. 4).

Pianko (1979) researched "to see whether different groups of college writers follow the same patterns as those of younger writers and to see whether there are other ways of characterizing processes of different types of students" (p. 275). Her study involved observing 17 first-year college students, "10 remedial and 7 traditional" (p. 275) while they composed an essay. Pianko observed their physical writing behaviors while writing and noticed that while all of the writers paused during writing, the nature of the pause seemed to differ between groups. After interviewing the students she came to important conclusions about the relationship between reflection, consciousness, and writing ability. She wrote,

> The act of reflection during composing—behaviorally manifested as pauses and rescannings and heretofore ignored as a component of the composing process—is the single most significant aspect of the composing process revealed by this study. It is reflection which stimulates the growth of consciousness in students about the numerous mental and linguistic strategies they command and about the many lexical, syntactical, and organizational choices they make—many of which occur simultaneously—during the act of composing.
>
> The ability to reflect on what is being written seems to be the essence of the difference between able and not so able writers from their initial writing experience onward. (pp. 277-278)

Yancey (1998) also quotes this passage of Pianko's and it is recounted here because the distinction Yancey makes between Pianko's work and her own is important; and is also a distinction between Pianko's work and this research. The distinction she makes is that Pianko observed visible behaviors associated with reflection while instead, she is more interested in "recover[ing] this strand of student talk" in order to encourage them to be "*agents of their own learning*" (Yancey, 1998, p. 5).

Yancey (1998) defines reflection as "1) the processes by which we know what we have accomplished and by which we articulate accomplishment and 2) the products of those processes" (p. 6). She describes reflection as a dialectical process that involves goal-setting (Flower & Hayes, 1981/2011), strategies for reaching the goals, (Flavell, 1976; Flower & Hayes, 1981/2011; Tarricone, 2011) and a way to observe whether or not the goals have been met. Through reflection, Yancey writes, students "witness their own learning" (p. 8) and "show us how they learn" (p. 8).

Yancey (1998) establishes her close relationship to Schön (1983, 1987). Schön explored the way professionals in a variety of fields could understand and engage reflection in order to meet the often unpredictable problem-solving challenges presented in their lives. Besides defining the concept of the reflective practitioner, Schön developed two concepts that were integral to Yancey's work: reflection-in-action and reflective transfer.

Before defining reflection-in-action, Schön (1983) described knowing-in-action, a concept akin to Berthoff's "allatonceness" (Berthoff, 1990, p. 86). Schön (1983) wrote that knowing-in-action is "spontaneously delivered without conscious deliberation" (p. 28) and that it often worked, as long as the situation was similar to a previous,

successfully negotiated problem-solving situation. However, in order for a practitioner to successfully navigate a new or different problem-solving situation, s/he would have to engage reflection-in-action; the process of reflecting on a previous strategy and its successes then can lead to reflective transfer of previous strategies into new situations.

Reflection-in-action.

Yancey (1998) grows and "re-theorizes" (p. 13) the concept of reflection-in-action (Schön, 1983) and adds constructive reflection and reflection-in-presentation. Together these three modes of reflection "*woven into* the curriculum" (Yancey, 1998, p. 17) construct a picture of reflection in the writing classroom.

Reflection-in-action becomes "the process of reviewing and projecting and revising, which takes place within a composing event" (Yancey, 1998, p. 13). Reflection-in-action is reflective response that focuses on the relationship between the writer, reader, and text. As previous research has shown (Emig, 1971; Pianko, 1979; Sommers, 1980/2011) stronger writers engage in this kind of reflective work. According to Yancey, "asking our students to reflect so as to adopt" (p. 26) reflective behaviors "invites them to behave as expert writers when they compose" (p. 26). Yancey highlights the student teacher memo of Sommers (1989/2006) that is discussed in more detail in the section on rhetorical story in Chapter Three.

According to Yancey (1998), the process of composing reflection-in-action benefits writers in three major ways. First, reflection-in-action helps the student generate a record of his/her thinking, writing, and decision-making. Once there is a record, the student can return to her own historical artifact for reference. Second, reflection-in-action creates more writing and often generates "insights they can use in a later draft" (p. 28).

Third, reflection-in-action provides students with the opportunity to develop "an *expertise* about their own writing, about how it works, when it works, as well about how it doesn't" (pp. 28-29).

Reflection-in-presentation.

Reflection-in-action is a reflective response based on a single composing event, but reflection-in-presentation is a "public and academic" (Yancey, 1998, p. 70) piece of reflective writing that explains or contextualizes the writer and the writing to an outside audience. Reflection-in-presentation asks students to "draw texts together for review, to discern patterns, to synthesize, even to recognize gaps and makes sense of those—and then to explain what they observe and understand in a very public way" (p. 70). Yancey said that reflection-in-presentation tends to appear in two situations: as "an independent document … or cumulative event" (p. 70) or "more commonly, within a portfolio at the end of a course" (p. 70).

The ability to write about one's reflections is the key difference between reflection-in-action and reflection-in-presentation. Reflection-in-presentation requires students to negotiate the kind of rhetorical shaping successful written communication requires; or, more simply, they need to understand themselves, their thinking, and their actions well *and* they need to write about them well. Yancey (1998) highlights here the important problem of associating this kind of reflective work with grade-based assessment.

Reflection and assessment.

Because one of the most common sites of reflection-in-presentation is the portfolio introduction, and because the pervasiveness of portfolio assessment continues to

grow, understanding and clarifying the complications of assessing reflective work is important. Yancey (1998) showed that the reflection-in-presentation that appears as the portfolio introduction came about because teachers wanted "students to participate in creating the contexts in which their texts would be read" (p. 73), and yet, "*the function of reflection in an assessment context isn't entirely clear*" (p. 145).

Yancey (1998) added that there is a lack of clarity about why the profession values this kind of reflection-in-presentation because there are two very different kinds of things teachers could be assessing in those works: the writer's authority or the writer's self-knowledge. She wrote that if teachers are assessing a writer's authority, then they are really assessing "two (related) performances: the writing performance and the reflecting/self-assessing performance" (p. 147). However, if teachers are assessing knowledge they are assessing "self-knowledge about one's writing behavior, but also knowledge about what it may take to be a writer" (p. 147). Yancey concludes: "no one really knows what we reward in reflection" (p. 147).

Yancey (1998) contributed to the thinking, writing, and theorizing of reflection important to this research in the college classroom. As further discussion in the third chapter will show, the rhetorical story is an example of reflection-in-action that invites students to engage with metacognitive discourse.

Organizing Theoretical Chaos

Although research in the field of metacognition has been steadily progressing since the mid-1970s, it remains a field that is full of "obscurity, fuzziness, and frustration" (Tarricone, 2011, p. 3). Tarricone's book was born partially out of her desire to understand the nature of the confusions surrounding metacognition and as "an

investigation into the interrelationship between the categories which contribute to its complexity" (p. 9). It is difficult to exaggerate the major contributions of this text. Not only does the book advance working theoretical frameworks for relationships between all of the major concepts related to metacognition, but it also offers a wealth of tools for advancing research in the field of metacognition; she presents her findings in the form of detailed concept maps, lists of assertions born of the synthesis of her research, lists of Higher Order Assertions that synthesize the major findings of previous research, and a complete taxonomy of the concept of metacognition.

Tarricone (2011) reviews all of the relevant research on metacognition to date; its scope stretches from Aristotle up to research reported in 2011. It is not intended to be a meta-analysis or a review of assessment methods (a limitation Tarricone acknowledges), but instead offers an "in-depth analysis and unification of the conceptual contributions to metacognition" (p. xvi). It offers a comprehensive framework that presents conceptual and operational definitions of the term *metacognition* as well as complex studies of the historical and contemporary relationship between metacognition and reflection, and metacognition and metamemory. It is the only book of its kind, and it is far-reaching, complex, and authoritative.

Tarricone's book is divided into four sections: the introduction (which includes a detailed history of the definition of metacognition), Part I, "Reflection: The Quintessence of Metacognition," Part II, "Metamemory: The foundational construct," and Part III, "Metacognition: The taxonomy." Although all sections of this book historically inform the current research, only certain sections will be addressed directly in this review of literature: the introduction, Part I (on metacognition and reflection), and "Future

directions in research" from Part III. Other major parts of this text have already been discussed (other material from the introduction is covered in chapter 1) and most of the material from Part III, the taxonomy itself, will be covered thoroughly in Chapter Three.

Defining metacognition.

Tarricone (2011) says that metacognition is a "complex construct" (p. 3) that has mystified and perplexed researchers in psychology and education for decades. She cites Brown (1987) saying, "metacognitive-like concepts are fraught with some of the most difficult and enduring epistemological problems in psychology" (Tarricone, 2011, p. 3). She argues that the problem is that, "any cognition related to knowledge and thinking could be identified as metacognition [which] makes it difficult to provide an inclusive definition of the construct and to identify, define, and isolate adequately all of the specific constructs that relate and contribute to it" (p. 4); as a result, "its attractiveness and its obscurity have led to colloquial, hackneyed" (p. 4) definitions.

After studying the wealth of metacognitive research conducted in a variety of fields, Tarricone herself settled on the definition Flavell (1976) created for metacognition as

> one's knowledge concerning one's own cognitive process and products or anything related to them, e.g., the learning-relevant properties of information or data….Metacognition refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal or objective. (Flavell, 1976, p. 232)

She also adds the definition Brown (1987) wrote: “Metacognition refers loosely to one’s knowledge and control of one’s own cognitive system” (as cited in Tarricone, 2011, p. 2) and argues that both Flavell and Brown’s definitions specify the two major categories of the construct as “cognition and regulation of cognition” (p. 2).

Reflection: The quintessence of metacognition.

Tarricone (2011) addresses the historical roots of reflection and metacognition. She cites Socrates, Plato, Descartes, Spinoza, Locke, Baldwin, Dewey, and Spearman as the major philosophers whose theories of reflection have most impacted the field of metacognition. Tarricone argues that, “essentially, self-awareness or autonoetic awareness is developed and instigated by reflection and prompted by problem solving contexts” (p. 13).

Tarricone shows that learners must be able to access deep knowledge gained through memory and experience in order to marshal appropriate strategies in problem-solving contexts. The process of accessing that knowledge only happens through reflection. Reflection can be an experience of private, wandering introspection, but in order for it to serve a learner, it must be “focused and applied” (p. 43). Verbalization, whether aloud, in informal or formal writing, is an important part of the constructive reflective process. She wrote, “Reflection including verbalization is essential for the development of metacognitive strategies and the monitoring and regulation of these strategies, especially in complex problem-solving contexts” (p. 27).

Tarricone (2011) refers repeatedly to complex problem-solving tasks. In the metacognitive literature, complex problem-solving tasks can include spatial challenges, math or physics problems, problems of logic, or problems that include “decision-making

and argumentation" (p. 19) such as those that exist in many writing classrooms. The important quality about these tasks is that they require higher-order reasoning. Tarricone wrote, "Complex problem contexts challenge and stimulate self-doubt. Doubt about knowledge and the efficacy of strategies stimulates reflection. This instigates the search for and development of effective problem-solving strategies" (p. 26).

She also argued "reflective processes are integral to higher-order reasoning processes applied during the solving of complex problems" (p. 21). Reflection is closely related to Flower and Hayes (1981/2011) concepts of cognitive monitoring. Tarricone defined cognitive monitoring as "the reflective awareness and monitoring of mental states and processes including the ability to control, judge, evaluate and regulate the status of knowledge within one's cognitive system" (p. 128). Cognitive monitoring allows a learner to gauge how well she has understood concepts or task requirements; it also controls other cognitive tasks such as imagining and visualizing. While reflection alone does not develop metacognitive knowledge, metacognitive knowledge cannot develop without skills in reflection because it "enables the development of higher-order reasoning processes and therefore the development of metacognition" (p. 21).

The taxonomy.

The taxonomy posited by Tarricone (2011) borrows from, combines, and otherwise grows out of previous taxonomies created by other researchers; Tarricone describes previous taxonomies by Flavell, Flavell and Wellman, Brown, Borkowski and Pressly, and Kuhn. The chapter includes many highly-detailed visual maps of cognitive monitoring, cognitive regulation, meta-knowing, and meta-memory, among many others. At the core of the confusion and complexity of metacognition are a few important core

elements. At the most basic level, a learner's ability to respond to a problem-solving situation can be broken down into his/her awareness of person, task, and strategy variables (Flavell, 1979). The "person" variable is the learner's awareness of self; her own strengths and weaknesses, personal history, and other forms of self-knowledge. Task knowledge is the learner's understanding of the task at hand; how accurately she understands the problem and the context surrounding the problem. Strategy knowledge is the learner's understanding of the possible goals and sub-goals that might help solve the problem.

A combination of a learner's skills or understanding in person, task and strategy variables helps define the kind of metacognitive skill s/he is able to employ. There are three kinds of metacognitive knowledge: declarative knowledge, procedural knowledge, and conditional knowledge. While all three levels of metacognitive knowledge should be in place for effective task performance (Harris, Graham, Brindle, & Sandmel, 2009), students at various skill levels often present dominant competence in one area over the others (Waters & Schneider, 2010).

Tarricone (2011) defines declarative knowledge as "stable, familiar, constant, established long-term knowledge which involves self-knowledge, self-awareness and a sensitivity to and evaluation of this knowledge" (p. 156). Tarricone adds, "essentially, declarative knowledge is knowing when and what you know and what you do not know" (p. 157). The definition of declarative knowledge shifts some when considered in the writing classroom. In their chapter *Metacognition and Children's Writing*, Harris, Graham, Brindle, and Sandmel (2009) also define the three levels of metacognitive knowledge and explore the way they present in writing situations. Harris et al. (2009)

state that declarative knowledge "refers to one's knowledge about oneself as a learner, including knowledge about one's own abilities (strengths and weaknesses). Declarative knowledge also refers to knowledge regarding the task, including knowledge, skills, and strategies needed for effectively completing the task under one or more conditions" (p. 133).

Tarricone (2011) defines procedural metacognitive knowledge as "knowledge of processes and actions or essentially knowing how…to meet task demands or task objectives" (p. 160). Harris et al. (2009) define procedural knowledge in the writing classroom similarly, as "the knowledge needed to carry out procedures, including strategies, in order to apply declarative knowledge and reach goals. This knowledge is about 'how to do it'" (p. 133). Procedural knowledge includes understanding and martialling "general and genre-specific strategies" (Tarricone, 2011, p. 135). Tarricone adds that procedural knowledge is "developed through application and experience" (p. 160) and that "beliefs about task difficulty can positively or negatively influence the identification and successful application of strategies" (p. 163). This means that students do not accurately assess their writing situation, they could easily apply unproductive strategies and it would present as weak procedural knowledge.

Conditional knowledge is the third category of metacognitive knowledge, but its relationship to the other two kinds is its most important feature. Tarricone (2011) says, "conditional knowledge involves knowing when and why to use declarative and procedural knowledge…it is discussed mainly in terms of declarative and procedural strategy knowledge, application and effectiveness in task situations" (p. 165). In Tarricone's analysis conditional knowledge reins over the other two forms of

metacognitive knowledge, but those other two forms operate on the same plane (one is not preferred over the other). Harris et al. (2009) say that conditional knowledge "refers to knowing when, where, and why to use declarative knowledge as well as particular procedures or strategies, and is critical to effective use of strategies" (p. 133). Conditional metacognitive knowledge helps 1) evaluate the writing task in order to 2) determine the strategies needed and, 3) to select from alternative strategies. Conditional knowledge is the kind of metacognitive knowledge that helps the student see the big-picture context of the task situation; it leads a student to transfer knowledge and strategies into new situations (Tarricone, 2009) and is therefore, of keen interests to many researchers.

Calls for future research.

Tarricone (2011) offers a thorough review of future directions for research. Based on her comprehensive review of existing research on metacognition, Tarricone argues that the first priority for researchers ought to be in metacognition and reflection. She wrote, "little research has taken place with regard to reviewing and testing a variety of identified critical reflection and critical thinking techniques" (p. 215). She continued, showing that one of the main challenges with reflection is understanding ways it can be engaged with learners. In her list of possible research questions she suggests that "the improvement of pedagogical outcomes" (p. 219) is an important, untapped area. She also asked two questions that are relevant to this research: 1) "What specific teaching strategies can be used to improve students' application of metacognitive knowledge and skills during complex problem solving? [and] 2) How can purposeful self-reflexivity and awareness be improved in novice problem solvers to facilitate problem solving in complex problems" (p. 219)? Given that Tarricone considers logic and argumentation to

be complex problems, and given that those are the kinds of complex tasks required of first-year (novice) writers, this research clearly answers Tarricone's call for more research on facilitating critical reflection for complex problem solving tasks.

Summary

This review of literature offers an overview of some of the key historical elements in the conversations about metacognition and writing studies. Flavell (1976), Flower and Hayes (1981/2011), Schön (1983), Yancey (1998), and Tarricone (2011) offer important entries into the development of the concepts embedded in the field of metacognition research as well as some of its implications for writing studies. These important works have been treated as guideposts in the development of research on metacognition and writing studies because their findings converse so readily with research that preceded and followed them, and with the common questions both fields have in common.

Chapter Three: Methodology

Defining the term *metacognition* has been challenging for researchers (Tarricone, 2011) and therefore, assessing metacognition has been challenging as well (Hacker, Dunlosky & Graesser, 2009). While most researchers still agree that there is no good way to measure metacognition (Hacker, Dunlosky, & Graesser, 2009, p. 61) most research suggests that even though there is, "disagreement about its definition, metacognition is assessed typically from inferences based largely upon observation of students' performance, or through interviews with students or via self-report measures" (Hacker, Dunlosky, & Graesser, 2009, p. 107). Schraw and Dennison (1994) write, "one of the most difficult problems facing researchers and practitioners is identifying metacognitively aware learners quickly and reliably" (p. 461). Experimental research on the impact of specific pedagogical tools on metacognition is lacking (Hacker, Dunlosky, & Graesser, 2009; Tarricone, 2011) and this study sought to offer answers to the impacts of a single pedagogical practice, the rhetorical story.

Research Questions

The research in this study operated at the intersection of two major fields: metacognition and writing studies; specifically, in the field of writing studies, the research explored the fields of reflection and metacognition. Even more specifically, this exploration of metacognitive growth in FYC courses (College Writing I) was guided by two research questions. The first research question was: what, if any, are the differences in metacognitive complexity between students who have learned to write rhetorical

stories and students who have not? The second research question was: What does metacognitive development look like in student writers?

Participants

The participants in this study included the students and teachers in two FYC sections of College Writing I at the University of Montana. The student participants were undergraduate students registered during the autumn semester of 2014. College Writing I is a First Year Composition (FYC) course that is required for students. It is primarily taken by traditional-aged (generally 18 years old), first-year college students from a wide variety of majors, disciplines, and subject interests. The students bring a wide-ranging set of academic competencies, study skills, and writing abilities into their College Writing I classes.

The teachers of the two sections of College Writing I involved in the study were second-year graduate student teaching assistants in the composition program who had already become familiar with the praxis of portfolio-based teaching and assessment.

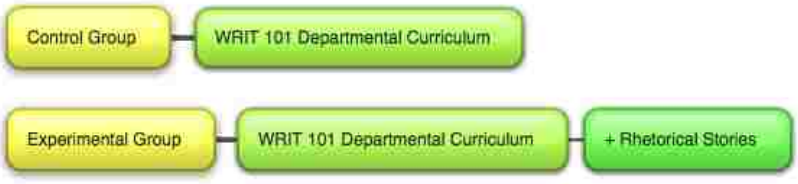


Figure 4. Quasi-experimental Research Group Curriculum Elements.

The parameters of this study were framed in quasi-experimental, nonequivalent control group, pretest-posttest design with some qualitative components. According to

Cozby and Bates (2012), "quasi-experimental designs address the need to study the effect of an independent variable in settings in which the control features of true experimental designs cannot be achieved" (p. 222). In this case, the experimental and control groups were sections of College Writing (WRIT) I, and since the selection of those sections were intentional, experimental control was not possible for two reasons. First, although the students in the two sections of College Writing I arrived in their registered sections without knowing the teachers, their arrival in each section could not be considered truly random because they had self-selected the time of day and length of class meeting. Second, the students did not know who their teacher would be when they registered for a section of College Writing I, however, it was not possible to control for the constitution of those classes; each section could have included different compositions of students at different stages of their college education and life – some may have included more veterans, non-traditional aged students, GED students, and international students. The researcher took two existing sections of College Writing I and randomly assigned the experimental and control teacher to the sections. Therefore, although their placement into a section could have possibly been considered random, the groups remained nonequivalent.

Although the composition of the student body in each course could not be controlled, every effort was made to control the external features of the sections. The researcher did her best to find experimental and control group sections that met at the same time of day, for the same length of time (either 50-minute or 75-minutes sections), and which were taught by teachers with the same amount of teaching experience.

The pretest-posttest in this study was not a true pretest-posttest design. Rather than a traditional pretest, the researcher collected data that indicated the students' general writing ability at the beginning of the course. The researcher collected ACT or SAT Writing Subscores for each student in both groups. Although the artifacts from the beginning and end of the semester will both offer indications about the strength of the students' writing ability, the indices were different and therefore, the participants did not respond twice to the same index or measure. However, the artifacts from the beginning and end of the semester will offer the same kind of norming information that a true pretest-posttest design affords. The initial scores, or pretest, allowed the researcher to understand and calibrate for where each group began the semester and the final artifact, or posttest, allowed the researcher to look for changes (Cozby & Bates, 2012) in each group from the beginning of the semester to the end.

As is required for experimental research, this study worked with a control group and an experimental group. Both groups were sections of College Writing I at the University of Montana. Each group consisted of one section of College Writing I, approximately 24 students and one teacher; together the study included potentially 48 students and two teachers. The students in the experimental section of College Writing I did not know that they were registering for a class that would involve an experimental praxis. However, each student was required to sign an IRB-approved consent form and was able to opt out of the study at any time.

College Writing I is taught entirely by graduate student teaching assistants who are trained by the Director of Composition during a week-long summer orientation and a semester-long pedagogy and theory course. All sections of the College Writing I program

follow a unified portfolio assessment curriculum; each section uses the same text, the same major assignments, and abides by the same policies for participation, attendance, assessment, and grading. The current College Writing I curriculum has been in place for over five years and there is a deep well of community knowledge, as well as a strong network of electronic, physical, and human resources to support its healthy function. Both the control and experimental sections of College Writing I followed the department curriculum. This means that they both used the same textbook, assigned the same major assignments, and abided by the same policies for participation, attendance, and grading.

Variables

The dependent variable in this study was the level of metacognitive knowledge in students in a FYC course. The dependent variable was measured by coding each sentence of the students' reflective work at the end of the semester. A relatively equal distribution of the three kinds of metacognitive knowledge signaled stronger metacognitive knowledge. Research indicates that "metacognitively aware learners are more strategic and perform better than unaware learners" (Schraw & Dennison, 1994, p. 460), especially in problem solving contexts (Flavell, 1979), and are therefore, often stronger writers.

The independent variable was the rhetorical story because it was the single pedagogical intervention practiced by the teacher of the experimental group of students. The rhetorical story blends many testing methods for teaching and assessing metacognition. It engages strategy instruction, modeling, talkbacks, and metacomprehension monitoring (Hacker, Dunlosky, & Graesser, 2009). It is a critical reflective response guided by highly structured assignments and feedback, a quality that makes it likely to impact metacognition (Tarricone, 2011).

The Rhetorical Story

The rhetorical story was the treatment being studied in the experimental group. The rhetorical story is a structured critical reflective writing assignment designed by the researcher that is composed about and turned in with a formal essay assignment. Anson (1994) considers this kind of assignment to be a secondary assignment that both informs and enhances a reader's understanding of the primary assignment. For example, the primary assignment might be a personal essay and the secondary assignment might be a reflection about the student's writing process or his/her thoughts about the success of the work. Secondary reflective assignments can take on a variety of forms and can request a variety of kinds of information from the writer, but it is important that the assignment is structured and that it is responded to by the teacher. Yancey (1998) wrote, "Students can theorize about their own writing in powerful ways….Such theorizing doesn't occur 'naturally': as a reflective process, it requires structure, situatedness, reply, engagement" (p. 19).

One example of a similar kind of secondary reflective assignment that elicits direct teacher response is the student-teacher memo (Sommers, 1989/2006). Sommers suggests asking students to write a memo to the teacher about their work as one way of "enlisting…participation" (p. 329) in the process of assessing student writing. In an informal response, Sommers asks students to discuss their writing process and their intentions for the formal essay.

While the rhetorical story shares some characteristics with the student-teacher memo it also differs from it in important ways. First, the rhetorical story assignment is more formal than the memo of Sommers (1989/2006) because it is a one to two page

critical reflective essay that is prepared outside of class and asks the students to respond to specific questions about *self*, *task*, and *strategy* (Flavell, 1976). The rhetorical story assignment is designed to embed metacognitive language into the rhetorical context of the classroom.

The rhetorical story could also be viewed as a blend of two other kinds of reflective writing assignments defined by Reynolds and Rice (2006). Reynolds and Rice write about the importance of "postwrites" and "companion pieces" (Reynolds & Rice, 2006). Experts in portfolio teaching and assessment, Reynolds and Rice (2006) consider reflective writing assignments such as postwrites and companion pieces to be vital in helping students develop reflection as a learning habit. According to Reynolds and Rice, postwrites "ask students both specific and progressively more sophisticated questions about their writing processes, their decisions, and their drafts" (2006, p. 33). This, too, is similar to the rhetorical story in spirit, but in practice quite different. The postwrite is a quickly written, brief response to a question or a set of questions about the writing the student has just completed. Teachers often assign them right before collecting the papers and students complete them in class. The rhetorical story, on the other hand, is assigned with the primary assignment so that the students can be considering the prompts while writing the paper. The rhetorical story is then written at home before turning in the completed work. In the College Writing I (WRIT 101) classes involved in this study, students completed rhetorical stories at home and then wrote a separate postwrite in the classroom.

Reynolds and Rice (2006) also describe a genre of reflective writing called "companion pieces" (p. 32). They describe companion pieces as writing that would

"accompany drafts, but they take on an essay form rather than a set of questions and short answers" (p. 32). The rhetorical story assignment asks students to give the same kind of thoughtful attention they would give an essay and in that way, is a type of companion piece. However, the prompts for companion pieces usually change with each primary writing assignment, while the prompts in the rhetorical story assignment remain the same (see Figure 5). The prompts of the rhetorical story assignment remain the same for each primary writing assignment so that the students can begin to see that each writing assignment is simply a different kind of task, and that with each new task, they were required to engage different strategies.

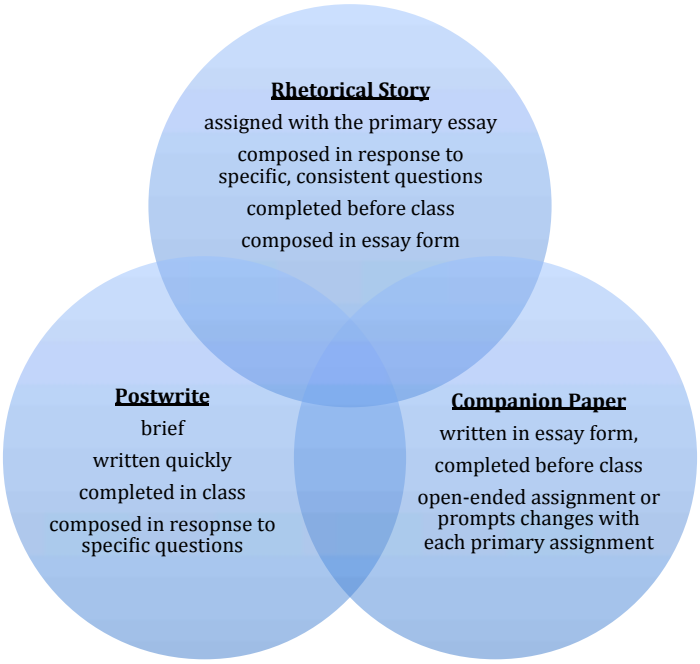


Figure 5. The rhetorical story in context. The Venn diagram above illustrates the relationship between postwrites, companion papers, and the rhetorical story.

As with postwrite, companion pieces, and the student-teacher memo, the rhetorical story is a low-stakes, ungraded piece of writing. Low-stakes writing offers students a chance to be more at ease because they can often focus solely on the expression of ideas without worrying as much about the more academic concerns (organization, grammar and punctuation, and style). The title of the assignment, the "rhetorical story" was also chosen because the idea of telling a story is disarming; most student don't think that they can fail at telling a story because the term connotes familiarity, trust, and sharing. However, although it is a low-stakes assignment, meaning the students can't really "fail" the assignment, they were held accountable for doing it; it was required for each unit; the teacher was instructed not to give feedback on the primary essay without the rhetorical story. The assignment was highly structured (Clark, Kirschner, & Sweller, 2012; Tarricone, 2011) and offered prompts to guide students' critical reflection about their writing. Specifically, the rhetorical story asked students to respond to three questions below. Some of the language in these specific prompts was chosen in order to align the questions with the language of the course text so that the students would be familiar with the terminology. For each primary assignment, students were asked to attempt to answer all three questions in writing, with equal attention and detail.

1) Describe yourself as a writer involved in this writing task. What was your stance? What was your motivation in choosing this topic? What strengths did you bring to the writing situation? What were your challenges?

2) Describe this writing task. What was being asked of you by this assignment? What was your purpose in composing? Who was your audience and what was their interest in the situation?

3) Describe the strategies you used to accomplish this writing task. Please describe one or two specific moves you made with your thinking, research, or writing. What decision did you make? What were your alternatives? What effects do you think your decision had on the finished essay?

There are ways in which the rhetorical story differs from the student-teacher memo, but also ways in which it aligns with the memo Sommers (1989/2006) created, especially in terms of the teacher's response to the writing; with both the memo and the rhetorical story, the teacher would use the students' reflective work as the starting place for her feedback on the primary assignment. Yancey (1998) wrote that without reflective responses such as the rhetorical story, a teacher responds to a primary text in one of the following ways, "relative to an ideal text in my head," "relative to each other," relative to what we did in class," "relative to what the writer is capable of" or "relative to what went into the making of the text" (p. 23). Yancey argued that reflective texts such as the rhetorical story—or works that exhibit what she calls "reflection-in-action"—allow the students to make their thinking visible and offer teachers context in which to read, understand, and respond to the students' primary essays.

The rhetorical stories also played an important role in how the teacher's responded to the primary writing assignments. The teacher of the experimental class was given a basic teaching guide for the rhetorical story, which included frequently asked

questions and common scenarios (Appendix C). The teacher was given the following instructions for responding to primary writing assignments by way of the rhetorical story:

> The rhetorical story is the place to begin your comments about a major essay. When you sit down to grade papers, you should: 1) Read the rhetorical story first. 2) Read the essay it accompanies. 3) Specifically intend to notice the moves the writer discusses in the rhetorical story. 4) Begin your feedback to the student by responding to the rhetorical story, specifically part three (about strategies) if possible. 5) If you have other major concerns about the student's work, choose one or two at the most to communicate to them. If you can link them to the rhetorical story, that's even better. 6) Make margin comments as you normally would. (see Appendix C bullet #4)

Critical reflective writing artifacts were collected from the students and the teachers. The student artifacts were the standardized test scores used to place them into College Writing I (pretest) and a sample of critical reflective writing from the end of the semester (posttest). Artifacts were collected from every consenting participant in the control and experimental group, however, only the work of students who completed the course were coded and analyzed. All written student artifacts were turned in to the teachers. Figure 6 depicts the respective artifacts collected. The teachers either emailed the electronic samples to the third party or sent signed, sealed artifacts to the third party. The researcher employed third-party help in removing any identifying information from the artifacts and making two more copies; one of which was kept in a fireproof lockbox at the researcher's home and the other was kept in the researcher's office on campus. All

electronic copies of artifacts were stored in email databases as well as password protected cloud-based storage. All artifacts remained sealed until after the teachers' final grades had been entered at the conclusion of the semester.

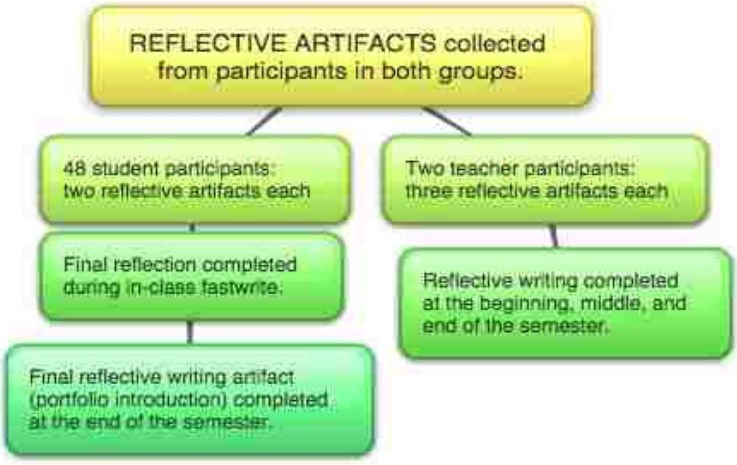


Figure 6. Data collection procedures and reflective artifacts.

Informal reflective artifacts were also collected from the students at the end of the semester (Appendix D). Unlike the critical reflections in the rhetorical stories or the portfolio introductions, these were informal reflections the students completed in class during one of the final classes of the semester. The teachers were instructed to write the following three questions on the board or project them onto the screen at the front of the room:

1) Reflective work is work that offers a student a chance to pause and consider something s/he is working on or has just completed. What kinds of reflective work did you do this semester?

2) Do you think the reflective work was important to your learning? Why or why not?

3) Do you have any other questions or comments about your reflective work?

The teachers were instructed to ask their students to answer in fast-write fashion (quickly, without stopping to edit or revise) for ten minutes in response to the prompts. These artifacts were enclosed in a signed, sealed envelope and were returned to the third party. The third party typed and coded the student responses in order to ensure confidentiality.

Reflective artifacts were also collected from the teachers of these sections (Appendix E). The teacher of the control group and the teacher of the experimental group were asked to complete short reflective responses at the beginning, middle, and end of the semester. The teacher reflections were designed to help the researcher understand the teachers' positions in response to reflection as well as their fidelity to the curriculum and the experimental praxis. At the beginning of the semester, the teachers were asked, "Based on your experience as a teacher, what role do you think reflection plays in learning?" At midterm the teachers were asked "What does reflective writing look like in your class this semester? How are the students responding to it? How are you engaging with it as a teacher?" At the end of the semester the teachers were asked "What kinds of reflective work did your students complete this semester? What role do you think the reflective work had in your students' learning this semester?"

The teachers were emailed the questions for all three of their critical reflections. They were asked to reply via email to the third party. The researcher employed third-party help in removing any identifying information in order to ensure confidential responses. All electronic copies of artifacts were stored in email databases as well as

cloud-based storage. All artifacts remained sealed until after the teachers' final grades had been entered at the conclusion of the semester.

Once the researcher was ready to begin coding the artifacts she employed third-party help in establishing an initial confidential code for each student artifact. Electronic copies of the code key were made and stored via computer. After the artifacts were coded, the researcher used a random number generator to establish an initial order for coding. A random number generator was used to establish a new order for all iterations of coding.

Trustworthiness.

The researcher addressed issues of trustworthiness and accuracy by using four different methods of verification. Creswell (2014) stated that verification is "a *process* that occurs throughout the data collection, analysis, and report writing of a study and standards as *criteria* imposed by the researcher and others after a study is completed" (p. 194). In this study the researcher engaged the following methods of verification:

1. Triangulate the findings (Merriam, 1998): The researcher coded the documents by word count and sentence count before coding for metacognitive knowledge. In the pilot study described further in Chapter Four, this triangulation had helped to ensure that every sentence of every sample was coded once and only once. The researcher also conducted a study of the inter-rater reliability levels of the Index of Metacognitive Knowledge in Critical Reflective Writing.

2. Peer review/debriefing (Lincoln & Guba, 1985): the index used for data analysis (IMK) has been reviewed by a variety of experts in the fields of metacognition and writing studies.
3. Clarify researcher bias (Merriam, 1998): see section below.
4. External audits (Lincoln & Guba, 1985): Because this is dissertation research, the co-chairs of the researcher's study acted as a means of external audit for this project from beginning to end. The inter-rater reliability study of the IMK also functioned as an external audit of the consistency of coding.

The role of the researcher.

Eisner (1991) highlighted the complex interaction between researchers' backgrounds and their ability to interpret data. It is important for researchers to articulate any possible bias for three major reasons: 1) identifying personal bias makes it more possible to avoid acting on the bias, 2) identifying possible bias for readers allows them to question whether or not *they* think the bias has influenced data collection, analysis, or conclusions, and 3) identifying bias demonstrates the researcher's desire for transparency and is hopefully understood as a gesture of trustworthiness.

In this situation, the researcher had a direct role in the design and implementation of the FYC curriculum. This means that she had clear hopes that the curriculum created situations, challenges, and demands that would provide opportunities for student growth. The researcher was also in direct supervision of the teachers of both classrooms, which means that it is possible that the artifacts from the classrooms could have been altered in important ways. For example, the teacher might have overly emphasized the metacognitive activities in ways that may have skewed the study's outcomes, or the

teacher may have performed his/her own reflections in ways that s/he assumes might have pleased the researcher. The researcher made every effort to help the teachers understand the level of confidentiality employed with all of the artifacts so that they would understand that the researcher's coding, analysis, and interpretation of the data would not impact their teaching evaluations.

The critical reflective writing artifacts from the student and teacher participants were coded, analyzed, and interpreted using different data analysis methodologies. The student artifacts were analyzed using relational content analysis based on the Index for Metacognitive Knowledge in Critical Reflective Writing (IMK) (see Appendix F). The IMK was an instrument designed by the researcher; it was based on The Taxonomy of Metacognition (Tarricone, 2011). The teacher artifacts were analyzed using rich feature discourse analysis (see Figure 7).

The posttest student artifacts (portfolio introductions) were initially coded for word count and the number of sentences. Next each sentence of each sample was assigned a code so that the researcher could keep track of each round of codes for each sentence. Next, the artifacts were analyzed using relational content analysis (Huckin, 2009). As research technique, content analysis "is the identifying, quantifying, and analyzing of specific words, phrases, concepts, or other observable semantic data in a text or body of texts" (Huckin, 2009, p. 14). Huckin describes content analysis as those situations in which the researcher needs to "combine quantitative ('objective') and qualitative ('impressionistic') approaches" (p. 14). He continues:

> A strictly quantitative approach takes only into account those words, phrases or other linguistic tokens that belong to a predetermined list and thus…overlooks all

> implicit meanings. A qualitative approach focuses rather on both explicit and implicit concepts, and empowers the researcher to use his or her judgment in determining…whether a particular linguistic token references a particular concept in the given context. (p. 15)

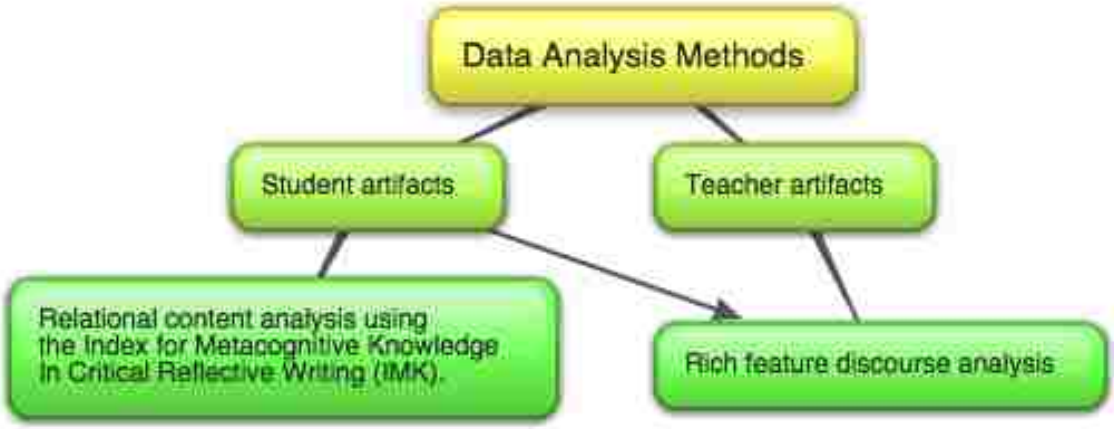


Figure 7. Data analysis methods for student and teacher participant groups.

Relational analysis is a type of content analysis that "examines the relationship between a number of concepts" (Huckin, 2009, p. 14). Specifically, the concepts that were examined via relational analysis were the three kinds of metacognitive knowledge presented in the texts. The distribution of the three kinds of metacognitive knowledge—declarative, procedural, and conditional knowledge—communicated the quality and complexity of a students' metacognitive knowledge. The relational content analysis of the three kinds of metacognitive knowledge were coded and analyzed using the Index of Metacognitive Knowledge in Critical Reflective Writing (IMK). Further discussion of the development and testing of the IMK appears in Chapter Four.

Student Reflective Fastwrites and Reflective Artifacts from Teachers

The student reflective fastwrites and the reflective artifacts from the teachers were analyzed using rich feature discourse analysis. Discourse analysis is a "method for analyzing the ways that specific features of language contribute to the interpretation of the texts in various contexts" (Barton, 2009, p. 57). Discourse analysis allows for the interpretive analysis of texts on both the micro scale (as in word choice, syntax, or sentence pattern) and the macro scale (analyzing the patterns of engagement with different social, cultural, or academic discourses).

Rich feature analysis is one kind of discourse analysis. Barton (2009) writes, "Rich feature analysis is particularly useful in the analysis of academic discourse" (p. 67). Barton (2009) offers the six basic methodological steps described by Huckin (2009). Barton cites Huckin's following six steps: 1) Select an initial corpus. 2) Identify salient patterns. 3) Determine "interestingness." 4) Select a study corpus. 5) Verify the pattern. 6) Develop a functional-rhetorical analysis that explains the significance of the pattern in its context (pp. 65-66).

Rich analysis shares many common features with grounded theory qualitative analysis and can benefit from the depth and detail grounded theory analysis brings to data coding strategies. Open and axial coding were used to "identify salient patterns," "determine 'interestingness'," and "verify the pattern" (Barton, 2009, pp. 65-66). Open coding is the process of "breaking data apart and delineating concepts to stand for blocks of raw data" (Corbin & Strauss, 2008, p. 195). During open coding "one is qualifying those concepts in terms of the their properties and dimensions" (Corbin & Strauss, 2008, p. 195). Open coding can happen in a number of different iterations; the goal is to tumble

the data over itself enough times that important relationships, concepts, and patterns surface.

Although a description of axial coding often follows open coding, it does not necessarily have to follow it sequentially in practice; open and axial coding have somewhat recursive relationships in that one can inform the other and vice versa. Axial coding is the process of "crosscutting or relating concepts to each other" (Corbin & Strauss, 2008, p. 195) in order to try to understand how the categories established in open coding might relate to each other.

During the process of open and axial coding, the researcher explored the data in search of clues to the causal conditions, intervening conditions, strategies and consequences that inform their experiences. Causal conditions are the "factors [that] caused the phenomenon" (Creswell, 2013, p. 86). Intervening conditions: broad and specific situational factors that influence the strategies" (Creswell, 2013, p. 86). Strategies are "actions taken in response to the core phenomenon" (Creswell, 2013, p. 86) and consequences are the results of those strategies.

Summary

This study explored the effects of the rhetorical story practice of assigning and responding to critical reflective writing on metacognition in students in FYC classes. The parameters of this study were framed in quasi-experimental, nonequivalent control group, pretest-posttest quantitative design with qualitative components. The study was guided by two research questions. The first question was, what, if any, are the differences in metacognitive complexity between students who have learned to write rhetorical stories and students who have not? The second research question was also explored: What does

metacognitive development look like in student writers? The dependent variable in this study was the level of metacognitive knowledge demonstrated in written artifacts from students in two FYC sections. The independent variable was the rhetorical story practice of assigning and responding to critical reflective writing. Artifacts collected from teacher participants and student reflective fastwrites were analyzed using rich feature discourse analysis. Artifacts collected from the student participants were coded using relational content analysis based on the IMK; the results were analyzed using descriptive statistics. Chapter 4 describes the development and testing of the Index of Metacognitive Knowledge in Critical Reflective Writing.

Chapter Four: Inter-rater Reliability Study of the IMK

Relational analysis was used to analyze the students' end-of-semester portfolio introductions. Relational analysis is a type of content analysis that "examines the relationship between a number of concepts" (Huckin, 2009, p. 14). Specifically, the concepts that were examined via relational analysis were the three kinds of metacognitive knowledge presented in the texts. The distribution of the three kinds of metacognitive knowledge—declarative, procedural, and conditional knowledge—communicated the quality and complexity of a students' metacognitive knowledge. The relational content analysis of the three kinds of metacognitive knowledge were coded and analyzed using the Index of Metacognitive Knowledge in Critical Reflective Writing (IMK).

Development of the IMK

The Index of Metacognitive Knowledge in Critical Reflective Writing (IMK) was designed by the researcher in order to assess metacognitive knowledge in critical reflective writing. It is an analysis tool that is also closely related to two other previous frameworks built to assess reflective work. Faigley, Cherry, Jolliffe, and Skinner (1985) developed a three-part framework for evaluating changes in students' composing processes. Their framework divided student work into general-intention responses, general-strategy responses, and task-specific-strategy responses. Yancey (1998) outlined four kinds of knowledge students acquire by reflecting-in-action: self-knowledge, knowledge of content, task knowledge, and judgment.

However, since the intention of the IMK was to code and analyze metacognitive knowledge in a portfolio introduction—a kind of reflection Yancey (1998) considers

reflection-in-presentation—it was most appropriate to align with the descriptions of metacognitive knowledge outlined by Tarricone (2011). Yancey discussed assessment and reflective work, particularly in regard to reflection-in-presentation, and highlighted the gap in teachers' ability to understand what they are actually assessing and rewarding in reflection-in-presentation artifacts. Yancey suggested that they were either assessing students' authority or ability to self-assess, or their self-knowledge and "awareness of [their] writing behaviors" (p. 174). Metacognitive language allows for both of these kinds of assessment and can possibly offer a holistic view of students' thinking and awareness. The IMK was designed to help translate metacognitive discourse into rhetorical discourse in order to be able to identify traits of metacognitive knowledge in critical reflective writing. As a framework, the IMK designated individual sub-traits for each of the three kinds of metacognitive knowledge and was used to code each of the students' sentences in the end-of-semester portfolio introductions. The index also includes two categories for sentences that do not convey metacognitive knowledge.

The Pilot Study

A pilot study using the IMK was conducted during the summer of 2013 and observations made from the pilot study were used to revise and refine the language of the index. Although the research question of the pilot study was different than the research questions of this study, the pilot also involved sentence-by-sentence analysis of portfolio introductions. Internal inconsistency, or lack of testing thereof, revealed weaknesses in the original IMK, namely that the descriptions were too general and did not leave room for transitional or fragmented sentences. The pilot also showed the importance of formally testing the inter-rater reliability of the index. The pilot study was conducted with

samples of portfolio introductions from students in College Writing II, collected over the span of four years. The purpose of the pilot study was two-fold: to generate and apply the original version of the IMK and to study the impact of one highly structured critical reflective writing assignment, which eventually became the rhetorical story.

The researcher also sought consultation from a variety of experts in the fields of metacognition and writing studies. P. Tarricone (personal communication, August 1, 2014), who wrote the taxonomy on which the IMK is based, has voiced her support for its fidelity to the concepts of her work. Among other comments made in lengthy email correspondence, Tarricone wrote that it was "good that you have made clear that you are only covering metacognitive knowledge in your research" (personal communication, August 1, 2014) since it is often so difficult to fairly isolate one metacognitive indicator. Two experts in student portfolios and reflective work in College Writing I were sent the IMK and offered their observations, insights, and advice about its language, application, and formatting.

Based on observations from the pilot study and on feedback from these experts in critical reflective writing, the descriptions within the IMK were revised. In the description of the IMK below, each section includes a brief description of one of the kinds of metacognitive knowledge, followed by writing characteristics or behaviors that signal the particular kind of knowledge. Following each section is an annotation that offers more detail about the kinds of writing often scored in that category.

Index of Metacognitive Knowledge in Critical Reflective Writing (IMK)

The IMK was used to code each sentence of the students' portfolio introductions. The IMK designates sub-traits for each of the three kinds of metacognitive knowledge

and also includes two categories for sentences that do not convey metacognitive knowledge. The IMK's descriptions, traits, and sub-traits are as follows:

Declarative Knowledge: Knowledge of oneself and one's abilities (strengths and weaknesses). Also includes task knowledge; knowledge, skills and strategies for completing the task. In reflective writing, statements that convey declarative metacognitive knowledge are focused on the relationship between *self* and *task*. These student writers make statements that:

D1: assess general personal strengths and challenges or recount personal experiences and preferences.

D2: simplistically recount or explain what happened (or didn't happen) or what was completed (or was not completed).

D3: demonstrate task awareness by naming a discreet task and beginning to explain his/her strategies for completion (but does not name strategy).

Annotation: Commonly coded declarative sentences focus on the connection between *self* and *task* (Flavell, 1979) and express personal preferences or explanations of "what happened" during an assignment. The following are a few examples of declarative quality writing: "I was very overwhelmed by that paper." "I did not understand what rhetoric was before this class." "The first assignment we did was the blind draft." "I spent more time on my second paper."

Procedural Knowledge: Knowledge needed to carry out procedures in order to apply declarative knowledge; tells the learner how to complete a task. In reflective writing, statements that convey procedural metacognitive knowledge are focused on the relationship between *task* and *strategy*. These student writers make statements that:

P1: name a strategy or behavior the student did or did not engage in a single assignment.

P2: explain why a particular strategy was engaged in a single assignment.

P3: observe more than one strategy or writing behavior in a single assignment.

P4: show that the student observes connection between strategies and tasks in a single assignment.

Annotation: Procedural writing focuses on the relationship between *task* and *strategy* (Flavell, 1979) and focuses on writing strategies, behaviors, or connections between assignments. The following are a few examples of procedural quality writing: "The arrangement could still use a little revision." "It outlined how to set up my subject, how to identify my audience and different techniques to steer my paper." "It proved very helpful for my next essay, the research-based persuasion." "When reviewing my own materials….I was surprised by the differences I saw."

Conditional Knowledge: Knowing when, where, and why to use declarative and procedural knowledge. In reflective writing, statements that convey conditional metacognitive knowledge are focused on the relationship between *person, task,* and *strategy*. These student writers make statements that:

C1: observe behaviors across writing assignments or throughout the course.

C2: explain when, where, or why a certain writing strategy was or would be of use across assignments or throughout the course.

C3: demonstrate an understanding of the class as a collection of interrelated writing tasks; may state or imply future use.

C4: demonstrate beginning theories about writing, rhetoric, learning, school, or their own practices, processes, or behaviors.

Annotation: Conditional quality writing is highly contextualized and considers *self*, *task*, and *strategy* (Flavell, 1979). Sentences indicating conditional knowledge attempt to or succeed in communicating why certain writing strategies work in certain contexts; the learners can observe relationships between writing tasks and can offer beginning theories about writing, rhetoric, or their own practices, processes or behaviors. The following are a few examples of conditional quality writing: "I learned just how much gearing a work toward a particular group changes the rest of the evidence used in writing." "One of the biggest obstacles I found was simply choosing an audience, as this choice determines the voice and content of a work." "[In the future] I will consider what is relevant to my audience, what my purpose in speaking to that audience is, and the message I intend to deliver." "The essay is short (college students are known for their small attention spans) (sic) uses colloquial language, and leaves out scientific data and citations."

Transitional/Miscellaneous: Sentences were coded as T/M if they were

- a quote from a peer or another source and were included without context or analysis.
- comments directly posed to the teacher ("you").

Fragmented: Sentences were coded F if they were

- a fragmentary interjection such as "so fun!" or "wow."
- a sentence fragment or impartial thought that did not offer enough information for analyzing metacognitive knowledge.

Inter-rater Reliability of the IMK

Before establishing codes for the writing samples from the current study, the researcher conducted an inter-rater reliability study of the IMK. In order to prepare for the inter-rater reliability study, the researcher scored all portfolio introductions (a total of 1,108 sentences) twice. For each coding round, the researcher used a random number generator to establish a coding order. For this study, each sentence was coded using one of the sub-trait codes from the IMK. For example, rather than simply assigning D to mark a sentence as declarative the researcher, assigned the more specific sub-trait codes of D1, D2, or D3, for example. During these first two rounds of coding, the researcher took careful notes about potential confusions or inconsistencies in applying the traits of the IMK to these samples of student writing.

After the first two rounds of coding were complete, the researcher examined the codes side by side, reviewed her process notes, and made small clarifying revisions to the IMK so that it would communicate more clearly to the coders. The researcher also calculated her own inter-rater reliability as a coder using Cohen's kappa calculation.

A third round of coding was conducted in order to pilot a potential method of coding for the coding training; the researcher sought to discover whether or not sentences could be reliably coded when removed from the context of the larger paper. Therefore, during the third round of coding a sample of student sentences was selected randomly for coding. The sample size, which would offer only a 5% margin of error, was determined by a sample size calculator at raosoft.com to be 286 of the 1,108 sentences. In order to randomize the sentences chosen for coding all 1,108 sentences were uploaded in a flashcard application on the educational website Quizlet.com. Each sentence was one side

of the flashcard while its code was on the other side. The researcher coded the first 286 sentences presented by Quizlet.com's flashcard application. However, any sentences that were inconsistently coded in the first two rounds were skipped. A Cohen's kappa calculation of reliability was run between the second and third round codes and it was determined that coding sentences removed from their original written context was not nearly as reliable as coding them in the context of their original writing.

Coder Training

The researcher identified four potential coders who met certain qualifying parameters. Potential coders were considered to be qualifying if they had: at least a Master's degree in English or English Education, extensive background teaching writing specifically to students in the approximate developmental range of traditional first-year writing students (approximately 18 years old), familiarity with portfolio instruction, assessment and introductions, and background in writing assessment. Two of the identified and invited coders were able to attend the coding training and both of them completed coding the materials.

The coding training was carefully planned and organized based upon the methods described by Myers (1980) and used by Beverly Ann Chin, Professor and Director of English Teaching, for the Montana University System Writing Assessment and University-wide Program-level Writing Assessment (UPWA) at the University of Montana; both of these two highly organized and widely engaged writing assessment trainings cater to diverse bodies of scorers with varying levels of writing assessment experience.

The coder training for this research project took place in stages. First, the researcher gave a small PowerPoint-supported lecture (see Appendix G) about metacognition and its role in problem solving, education, and writing. The lecture also offered the coders a brief introduction to the concepts built into the IMK. The second stage of the coder training included a study of anchor sentences and the actual IMK. The anchor sentences were carefully chosen by the researcher because they were clear representations of the way the traits and sub-traits of the IMK typically appeared in students' portfolio introductions. The researcher and the coders read through each trait and sub-trait of the IMK and then reviewed the corresponding anchor sentence, making sure to verbally process how the sentence expressed the kind of metacognitive knowledge described in the sub-trait. Any questions about the IMK were carefully explored.

During the next stage of the coder training, the researcher gave each coder a supplemental coding guide (Appendices H-L) that included visual depictions of declarative, procedural, and conditional knowledge, as well as a guide to some commonly confronted questions, potential inconsistencies, and examples of difficult sentences to code. The coders and the researcher reviewed the anchor sentences while referencing the new supporting materials, and then moved on to coding two practice papers together. The practice papers were actual student portfolio introductions from this research study; they were chosen because they were short and the majority of their sentences were relatively straightforward. With the first practice paper, the coders and the researcher talked through the first 10 sentences aloud and came to consensus on the appropriate code. After that, they each coded the next same 10 sentences quietly and then everyone shared their codes, discussed their reasoning behind assigning their codes, and worked toward a

consensus code. By the end of the second paper, the researcher and the coders believed that the coders were ready to begin coding their sample papers independently.

Each coder was assigned seven student samples, which was a total of 289 sentences. The sample size, which would offer a 5% margin of error and therefore, 95% confidence level, was determined by raosoft.com to be 286 sentences. Both coders completed two of their student papers while still at the coding training; the rest were completed within the following week. The researcher emailed each coder an excel file in which to record each code they completed after the training. When the researcher received the data from the coders, a Cohen's kappa was calculated between the researcher's codes and each coder's codes. A Cohen's kappa was then calculated between the codes from each coder.

Coding with the IMK

After the IMK was shown to be a reliable coding index, the researcher reviewed all available sub-trait codes for all 1,108 sentences and determined the appropriate dominant trait code for each sentence. For example if sentence 17.139 had sub-trait codes of D1, D2, and D3, the sentence's dominant trait was D, or declarative. Because the sub-trait designations often overlapped considerably in order to accommodate a coder's interpretation of the sentence, the sub-traits were important for training and cross reference. However, because of the overlap between the possible characteristics leading to sub-trait designations, and because one sentence could easily be characterized by more than one sub-trait, the sub-traits themselves did not communicate anything specifically about the work. The important characteristic was the dominant trait. If a sentence had sub-trait codes that were inconsistent across dominant traits (for example, one coder

coded it a D, while the other two coded it a C) the researcher marked the sentence and created a list of sentences that still had inconsistencies. After collecting all inconsistencies, the researcher blindly coded those sentences again and in each case was able to establish a dominant code.

Once each sentence was assigned a dominant code, the researcher calculated the distribution of metacognitive knowledge for each paper. For each paper the researcher determined what percentage of the sentences were communicating declarative knowledge, which were communicating procedural knowledge, which were communicating conditional knowledge, and which were transitional/miscellaneous or fragmented.

Assessing Writing Quality

The researcher used the University-wide Program-level Writing Assessment Holistic Rubric to assess the quality of each writing sample. After extensive piloting and revision, the University-wide Program-level Writing Assessment Holistic Rubric has been used by the University of Montana for its assessment of writing from lower-division writing courses. The rubric is based on concepts such as sense of purpose and audience, organization, ability to synthesize ideas, writing style that is appropriate for purpose and audience, and grammar and mechanics. Based on these characteristics, a paper can be coded with a score of 1 (Novice), 2 (Nearing Proficiency), 3 (Proficient), or 4 (Advanced Proficient).

The researcher chose the University-wide Program-level Writing Assessment (UPWA) Holistic Rubric for three major reasons. First, it was specifically developed to be applicable to a very wide variety of texts from a diverse array of disciplines and it

would easily apply to the portfolio introductions. Second, the rubric allowed the researcher to assign a numerical score to each sample paper. Third, although College Writing 1 is an introductory writing course, the rubric was intended to assess student writing at the end of the *intermediate* course. Therefore, while the sample of student writing could not reasonably be expected to score high with this rubric (because the students had not yet had the intermediate writing course), the score could indicate readiness for the intermediate writing course at the University of Montana.

Summary

The Index of Metacognitive Knowledge in Critical Reflective Writing (IMK) was pivotal in the analysis of the students' end-of-semester portfolio introductions. Since it was an index designed by the researcher it required thorough testing before it was used to decide upon definitive analytical codes. A pilot study of the IMK was conducted in 2013 and resulted in significant revisions of the language of the traits and sub-traits. An inter-rater reliability study was conducted with methods based on Myers (1980) and included careful coder selection and scaffolded coder training. The researcher then used the University of Montana's University-wide Program-level Writing Assessment (UPWA) Holistic Rubric to assess the quality of the writing in the student writing samples.

Chapter Five: Data Analysis

Due to the variety of types of data generated by this study, the analysis of the data was conducted using two different methods. The posttest critical reflective writing artifacts from the student participants (the end-of-semester portfolio introductions) were coded, analyzed, and interpreted using relational content analysis via the Index for Metacognitive Knowledge in Critical Reflective Writing (IMK). The end-of-semester reflective artifacts from students as well as all of the teacher artifacts were analyzed using rich feature discourse analysis.

The posttest critical reflective writing artifacts from the student participants (the portfolio introductions) were analyzed using relational content analysis based on the Index for Metacognitive Knowledge in Critical Reflective Writing (IMK). Content analysis includes "identifying, quantifying, and analyzing…specific words, phrases, concepts, or other observable semantic data in a text or body of texts" (Huckin, 2009, p. 14) and works well in situations in which the researcher needs to "combine quantitative ('objective') and qualitative ('impressionistic') approaches" (p. 14).

Relational analysis is a type of content analysis that "examines the relationship between a number of concepts" (Huckin, 2009, p. 14). In this research study the concepts that were examined via relational analysis were the three kinds of metacognitive knowledge presented in the texts. The distribution of the three kinds of metacognitive knowledge—declarative, procedural, and conditional knowledge—were used to describe the quality and complexity of a student's metacognitive knowledge. The relational content analysis of the three kinds of metacognitive knowledge were coded and analyzed using the Index of Metacognitive Knowledge in Critical Reflective Writing (IMK).

Based on The Taxonomy of Metacognition (Tarricone, 2011), the IMK was designed and developed by the researcher in order to represent metacognitive concepts in rhetorical discourse in order to be able to identify the traits of metacognitive knowledge in critical reflective writing. In this way, the IMK bridges the assessment gap identified by Yancey (1998) who suggested that when teachers assess portfolio introductions they are either assessing students' authority or ability to self-assess, or their self-knowledge and "awareness of [their] writing behaviors" (p. 174); it offers a holistic view of students' thinking and awareness presented in their writing.

The end-of-semester reflective artifacts from students, as well as all of the teacher artifacts, were analyzed using rich feature discourse analysis. Rich feature discourse analysis is a "method for analyzing the ways that specific features of language contribute to the interpretation of the texts in various contexts" (Barton, 2009, p. 57). Discourse analysis allows for the interpretive analysis of texts on both the micro scale (as in word choice, syntax, or sentence pattern) and the macro scale (analyzing the patterns of engagement with different social, cultural, or academic discourses).

Rich feature analysis is one kind of discourse analysis that shares many common features with grounded theory qualitative analysis in which researchers examine how categories "crosscut and relate to each other" (Corbin & Strauss, 2008, p. 195). Rich feature analysis benefits from the depth and detail of grounded theory analysis and more specific data coding strategies. Open and axial coding were used to "identify salient patterns," "determine 'interestingness'" and "verify the pattern" (Barton, 2009, pp. 65-66).

Inter-rater Reliability Study

The main tool for assessing metacognitive knowledge in this study was the IMK. In order to study the reliability of this index, the researcher conducted an inter-rater reliability study. The inter-rater reliability study, which took place over many rounds of coding, measured the researcher's own reliability as a scorer as well as the reliability of two trained coders.

Since the researcher herself designed the IMK and would be conducting the coding training during the inter-rater study, the first part of the inter-rater reliability study measured the researcher's own reliability as a coder. During the first two rounds of coding, the researcher coded all 1,108 sentences. Cohen's kappa measures inter-rater reliability by measuring of consistency between codes and removing the chance of a coder randomly guessing at a code (Landis & Koch, 1977). According to Landis & Koch (1977) a Cohen's kappa of 80% or higher demonstrates high reliability. Between the first two rounds of coding, which included 2,216 sentences, the Cohen's kappa was 98% (K=.98) which means that the researcher consistently coded the sentences with the same type of metacognitive knowledge 98% of the time.

The third round of coding was conducted differently. The goal of the third round of coding was to identify the best method of presenting trained coders with sentences to code. The researcher was trying to determine whether sentences would be more reliably coded in the context of their original essays or removed from that context and presented as individual sentences. In order to remove each sentence from its original context, all 1,108 sentences were uploaded to the educational website Quizlet.com. Quizlet.com generated flashcards with one sentence per card. In "flashcard" mode, the website then

presented each sentence in a scattered, random order. After removing any sentences that were inconsistently coded in the first two rounds, the researcher coded the first 286 sentences presented by Quizlet.com. According to raosoft.com, 286 sentences created a statistical sample of the sentences that would generalize results with only a 5% margin of error. The Cohen's kappa for the third round of coding was 60% (K = .5997). Landis and Koch (1977) consider this to be moderately strong reliability, however, 60% reliability is not nearly high enough to be acceptable and therefore, the coder training for the inter-rater reliability study was conducted with complete student writing samples rather than individual sentences (see Table 1).

Table 1

Comparison of Cohen's kappa Values for Two Coding Methods

Coding Method	Cohen's kappa
Complete Papers	.980
Individual Sentences	.599

After the coder training, the coders independently scored seven complete portfolio introductions; collectively, the portfolio introductions included 289 sentences, which was a statistical sample that would ensure generalizability of the results with only a 5% margin of error. The Fleiss kappa statistic is used to measure inter-rater reliability with more than two raters (Landis & Koch, 1977). According to Landis and Koch (1977) a Fleiss kappa score in the range of .81-1.00 is considered to be the highest degree of

agreement and is labeled, “almost perfect” (p.165). The Fleiss kappa score for all three scorers of this sample was .834 or 83.4% agreement.

Pretest Data Results

The pretest data in this non-traditional pretest, posttest structure, consisted of a collection of standardized measures of literacy from tests students completed before registering for their writing courses. The test scores included ACT Writing Subscore and the SAT Writing Score. Two of the 31 students had writing scores from the University of Montana’s Writing Placement Assessment. All students who register for College Writing I must meet one of two conditions. Either they must complete Developmental Writing (WRIT 095) or they must have entrance scores that place them directly into College Writing I (WRIT 101). All of the students in this study arrived in College Writing I based on their placement scores; none of them matriculated from Developmental Writing. Sometimes students arrive at the university without placement scores or with expired scores; those students take the Writing Placement Assessment.

Analysis of the pretest data indicated that both classes began the semester with nearly exactly average scores. Both the control and experimental group students averaged a score of 8 on the ACT Writing Subscore; a score between 7-11 places students into College Writing I, so a score of 8 means the students were writing in the lower range of possible scores. The SAT Writing Scores for both groups were also quite close; the control group’s average was 510, while the experimental group’s average was 508. This small discrepancy means that some members of the experimental group began the semester slightly behind the control group in writing ability. SAT Writing Scores between 440-700 place students into College Writing I so again, average scores of 508 or

510 position these students on the lower end of this range of writing ability. Two students in the control group took the University of Montana's Writing Placement Assessment and both earned a score of 3. Scores between 3 and 5.5 places students into College Writing I, so again, these two students began the semester in the lower end of this range of writing ability.

Collectively, these scores indicate that the students in both groups began the semester at quite nearly the exact same writing ability, with the possibility that the experimental group began a very small stride behind (see Table 2). Both groups also began the semester on the weaker end of the spectrum of writing abilities.

Table 2

Mean Pretest Writing Scores on ACT, SAT, or UM Writing Exams for Control and Experimental Groups

Writing Scores	ACT	SAT	UM
Control	8	510	3
Experimental	8	508	(none)

Posttest Data Analysis and Results

The posttest data in this non-traditional pretest, posttest structure consisted of 31 end-of-semester portfolio introductions written by study participants. Although there were 44 students total between the courses, the researcher only received permission to study the writing of 31 students; there were 18 introductions from the control group and 13 from the experimental group. Within the 31 introductions there were 1,108 sentences.

Distribution of Metacognitive Knowledge

Because distribution of metacognitive knowledge is indicative of strong metacognitive skills, one of the main analyses conducted on the portfolios was a study of the distribution of declarative, procedural, and conditional knowledge communicated in the text. In this study, papers were defined as weak, moderately strong, or strong based on the distribution of metacognitive knowledge communicated in the writing in their portfolio introductions. Papers were categorized as having a weak distribution if there was more than 10% difference between all three kinds of metacognitive knowledge. Papers were labeled moderately strong if the distribution was 10% or less between two types of knowledge. Papers were labeled as strong if there was 10% or less between all three types of metacognitive knowledge. The researcher chose a 10% guideline for distributions between types of knowledge because it supported the goal of a high level of consistency across the three types of knowledge (see Table 3).

Table 3

Assignment of Description Labels of Metacognitive Complexity

Labels	Differences in Metacognitive Knowledge Categories of Declarative, Procedural, and Conditional
Weak	> 10% among all three categories
Moderately Strong	< 10% between two categories
Strong	< 10% among all three categories

Papers were categorized as having a weak distribution if there was more than 10% difference between all three kinds of metacognitive knowledge. For example, paper number 146 showed the following distribution (rounded to the nearest whole number):

6% declarative knowledge, 55% procedural knowledge, and 32% conditional knowledge (as well as 3% each of transitional/miscellaneous and fragmented sentences). These percentages show a dominance in procedural knowledge.

Papers were labeled moderately strong if the distribution was 10% or less between two types of knowledge. Paper number 101 is a good example of a paper with moderately strong; its distribution is as follows: 45% declarative, 25% procedural, and 30% conditional. Although these categories are more evenly distributed than in paper number 146, there is still a 15% span between declarative and its next closest category, conditional, and it was therefore, labeled as moderately strong.

Papers were labeled as strong if there was 10% or less between all three types of metacognitive knowledge. For example, paper number 135 had the following distribution: 31% declarative, 33% procedural, and 36% conditional. These distributions show 10% or less separation between all three categories so it would be defined strong distribution across three categories (see Table 4).

Table 4

Comparison of Metacognitive Level Distributions in Control and Experimental Groups

Course Distributions	**Weak**	**Moderately Strong**	**Strong**
Control	13/18 (72%)	5/18 (28 %)	0/18 (0%)
Experimental	3/13 (23%)	4/13 (31%)	6/13 (46%)

By the end of the semester, there were marked differences between the metacognitive knowledge demonstrated by students in the two study groups. Most noticeably, the writing from the experimental group demonstrated stronger metacognitive

knowledge. 72% of the control group papers demonstrated weak metacognitive distribution compared to only 23% of the experimental group. Twenty-eight percent of the control group and 31% of the experimental group demonstrated moderate metacognitive knowledge. The most marked result of this analysis, however, is that none of the control group writers demonstrated strong metacognitive knowledge distribution compared to nearly half, or 46% of the experimental group. These results show that after a semester of writing and informal reflective work, the majority of the writers in the control group demonstrate weak metacognitive distributions. However, the students in the experimental group who were taught and assessed using a highly-structured critical reflective writing exercise, the rhetorical story, were overwhelmingly able to write with moderate or strong metacognitive knowledge distributions; only three of the students had a weak distribution while 10 of the 13 students had moderately strong or strong distributions—and nearly half of the class (46%) had strong distributions.

Assessment of Writing Quality

In order to gauge the quality of each writing sample, the researcher blindly scored each sample based on the University of Montana University-wide Program-level Writing Assessment Holistic Rubric (see Appendix M). The UWPA Holistic Rubric has been used by the University of Montana for its assessment of writing from intermediate-level writing courses. The rubric is based on concepts such as sense of purpose and audience, organization, ability to synthesize ideas, writing style that is appropriate for purpose and audience, and grammar and mechanics. Based on these characteristics, a paper can be coded with a score of 1 (Novice), 2 (Nearing Proficiency), 3 (Proficient), or 4 (Advanced Proficient). Over the past three years, the researcher has been involved in the

development, piloting, and revision of the Holistic Rubric; she has also taken leadership roles in training faculty, graduate students, and administrators in how to use it to score student writing. Because of this extensive background and familiarity, the researcher was confident in her ability to accurately assign scores to the student writing samples in this study.

It is important to note that the researcher scored the student writing samples before learning whether each paper belonged to the control or experimental group. In a randomly generated order, the researcher read each student writing sample and assigned a score of 1, 2, 3, or 4. Before learning whether or not the writing was from the control or experimental group, the researcher made observations about the relationship between writing quality and distribution of metacognitive knowledge (see Table 5).

Table 5

Frequency of UPWA Scores/Writing Strength and Metacognitive Distribution

	Metacognitive Level		
	Weak (16)	Moderately Strong (7)	Strong (8)
UPWA Score			
1 (Novice)	4	0	0
2 (Nearing Proficiency)	3	2	0
3 (Proficient)	6	0	3
4 (Advanced Proficient)	3	5	5

An examination of the UPWA scores and the metacognitive distributions showed a number of things. First, while there were writers of all levels with weak distributions, no Novice writers had moderately strong or strong metacognitive distributions. Also, the majority of the students who were scored as Advanced Proficient writers had moderately strong or strong metacognitive distributions. The anomaly in this pattern was the

presence of six Proficient writers who had weak distributions and three of whom had strong distributions.

After the researcher identified the papers based on their source, observations were made about the writing strength of each group. The control group writing scored an average of 2.7, which is in the high range of Nearing Proficiency, while the Experimental group scored an average of 3.4, which is in the Proficient range. A two-tailed t test with alpha of .09 showed a significant difference (p=.087) between the writing scores for the control group (M=2.7, V=1.2) and the experimental group (M=3.4, V=.76). Seventy-two percent of the control group knowledge distribution levels for writing were in the weak category while 77% of the experimental group levels were moderately strong to strong (see Table 6).

Table 6

Writing Strength and Metacognitive Knowledge Distribution Between Control and Experimental Groups

Writing Strength	Average UPWA Score	Weak	Moderately Strong	Strong
Control	2.7	72%	28%	0%
Experimental	3.4	23%	31%	46%

End of Semester Student Reflections

At the end of the semester students were asked to answer three brief exit questions about the kinds of reflective work they completed during the Autumn 2014 semester.

Both classes were asked to write longhand for ten minutes in response to the same three questions regarding their reflective work over the course of the semester. The questions were: 1) Reflective work is work that offers a student a chance to pause and consider something s/he is working on or has just completed. What kinds of reflective work did you do this semester? 2) Do you think the reflective work was important to your learning? Why or why not? 3) Do you have any other questions or comments about your reflective work?

Emerging categories and themes.

Open and axial coding were used to "identify salient patterns," "determine 'interestingness'," and "verify the pattern" (Barton, 2009, pp. 65-66). During the first round of coding, the researcher identified three initial categories in the responses from the control and experimental groups. Those initial categories were 1) length of response, 2) awareness of reflective activity, and 3) specificity of the responses.

During initial coding, the difference in the length of the responses emerged as one very notable difference, therefore, the researcher gathered data about the actual difference in length. The control group wrote a total of 725 words, which was an average of 72.5 words per student response. The experimental group wrote 1,932 words or an average of 149 words per student (see Table 7). This shows that the experimental group wrote approximately twice as many words in response to the same prompts.

The second category, "awareness of reflective activity" emerged primarily in regard to students' answers to question #1, "What kinds of reflective work did you do this semester?" There was a wide variety in the responses to this question, which was notable given that both groups were asked to be reflective in nearly all the same ways. Students

Table 7

Word Counts on Exit Question Responses for Control and Experimental Groups

Exit Question Responses	Total Words	Avg. Words/Response
Control	725	72.5
Experimental	1,932	148.6

in both classes were asked to engage in reflection during all stages of their writing processes: brainstorming and invention work, research, drafting, workshop with peers, editing, revising. They were all asked to reflect after each paper (some wrote postwrites, others rhetorical stories), and they all created a portfolio and wrote an end-of-semester portfolio introduction. However, while the experimental group seemed to come to find reflection in a wide array of activities—everything from "talking" to "reading" to "essay construction"—the control group's responses hovered around the same few activities (see Table 8).

The responses from the control group were straightforward, however, only 10 responded. Ten percent (1) listed three reflective activities. Ten percent (1) listed two reflective activities. Sixty percent (6) of the students listed a single reflective activity from over the course of the semester. However, 20% (2) students were unable to list a single reflective task they completed, which is particularly notable given that even if they did not complete the postwrite, they had to have engaged in the rest of the above categories in order to pass the course. This means that they did reflect, but were not aware of doing so. The most popular response from the control group (40%) was the postwrite reflection they completed in class before turning in each major paper. One

Table 8

Types of Reflective Tasks Listed in Exit Responses

Type of Reflective Task	Percent Control	Percent Experimental	Assigned to Both Groups?
Postwrites	40	0	Control only
None (no task named)	20	0	Option for both
Place Journal	10	0	Control only
"Scratch sheets"*	10	0	Not assigned at all
Lifeplace Essay	10	0	Yes
Op-ed Paper	10	0	Yes
Whole Portfolio	10	0	Yes
Drafting Workshop	10	23	Yes
Drafting (general)	10	8	Yes
Sketches	0	8	Yes
Research	0	8	Yes
Editing	0	8	Yes
Essay Construction	0	8	Yes
Revision	0	15	Yes
Fastwriting	0	15	Yes
Reading	0	15	Yes
Talking	0	15	Yes
Portfolio Introduction	0	15	Yes
Rhetorical Story	0	69	Experimental only

* Note: because some students cited more than one activity in their response, the percentages do not total to 100%.

student (10%) described his/her own self-made reflective work—the "scratch sheet"—and considered it his/her only reflective work of the semester. Two students (20%) listed particular major assignments as reflective (the Lifeplace Essay and the Op-ed paper), but did not list any of the work that came before or after the major writing, which is generally when the focused, critical reflective work happens.

The responses from the experimental group were more diverse and complexly integrated. Seventy-seven percent of the students listed more than one reflective task;

within that group, 15% listed three or more reflective tasks. Sixty-nine percent of the students listed the rhetorical story as a reflective task, making it the most popular response. Twenty-three percent listed workshop as a reflective task, while revision, fastwriting, talking, reading, and the portfolio introduction were all listed by 15% of the students. There were no students who could not list a reflective task.

Another theme that emerged from the analysis of these responses was that many of the responses from the control group referred to reflective activity as a single, discreet event while the experimental group saw it as an activity that was related to other kinds of writing and learning activities. One third of the reflective tasks listed by the control group were one-time activities and the student comments show that the student saw those activities as isolated to a single purpose. For example, one student in the control group wrote, “I reflected on my op-ed piece. It allowed me to take a time and think about the criticalness that I applied during my interaction with my primary doc, and the piece I wrote that followed. Other than that, I don't believe I reflected much more.” This student was also asked to reflect on his/her other major papers as well, but this is the one time the student either did it or remembered doing it. In terms of metacognitive knowledge, this shows that the control group viewed reflection as something that happened at discreet times for a particular purpose despite the fact that it happened continuously, and with much iteration all semester.

In contrast, 100% of the students from the experimental group listed tasks that spanned the entire semester; in terms of metacognitive knowledge, this shows conditional knowledge, or finding connections between activities across the semester. They cited abstract activities that happened in many contexts, such as “revision,” “editing,”

"reading," "talking," or "workshop." For example, one student answered the first question ("Reflective work is work that offers a student a chance to pause and consider something s/he is working on or has just completed. What kinds of reflective work did you do this semester?") this way, "There were lots of times in this class that we had to reflect. Whether it was a reading, fast write, or after our essays. The rhetorical stories for our essays were the major reflection we had to do in this class."

The third category that emerged in the first round of coding was the specificity of the responses. While some members of the control group were able to respond to questions about reflection and learning with specific answers, other students in the control group were unable to describe actual reflective tasks and instead said, "I reflected on a lot about the essays I wrote and also things that I had experienced in the past that lead to who I am" while another wrote, "I wrote a couple of actual reflections, so those were, you know, reflective."

In contrast, the responses from the experimental group were more specific about their reflective activities. Here is one example from a student who felt that his/her peer review workshops were the most important reflective work:

> Most of the reflective work I have done during this semester has been after workshops. The workshops gave me the ability to reflect my work verbally with another person who was in a similar situation. After voicing my game plan to someone else about how I felt my paper was going and about what I felt I needed to change, it was much easier to organize my thoughts and accomplish a better paper than what the first draft presented. There is something about verbally reflecting on my papers that helps me understand the next steps I should take.

Refining codes and categories.

In the next round of coding, the exit question responses were axially coded based on two of the three initial categories: awareness of reflective activity and specificity of the responses. The answers were color coded, then cut and pasted into new documents in order to be able to examine the quality of the similarities and differences between the two groups. After examining the responses broken out this way, the researcher added a new category for complexity of response.

Complexity of response became an important category for two reasons. First, although it was notable, the word-count length of a written response alone is not a reliable indicator of other qualities such as complexity or substance. Therefore, although the experimental group's responses were twice as long, that would not necessarily indicate that they were stronger. The second reason complexity became an important category is that many students in both groups were specific about their reflective activities, but not all of the students described the activity or its purpose, or began to explain their own theories about how, when, and why reflective work ought to be engaged in the classroom.

Examining the complexity of the responses allowed the researcher to get to the core difference between the responses from each group. The difference in complexity between the groups was particularly marked in the response to the second question, "Do you think the reflective work was important to your learning? Why or why not?" The majority of the students in both groups found the reflective work to be important to their learning; in the control group there was one person who did not think it was important to his/her learning (see Table 9). The student in the control group who did not think

reflection was important to learning instead thought that reflection led to making his/her writing less organized. The student wrote, “Reflection makes me want to change a thought or opinion, which makes my paper unorganized, which is my biggest issue to begin with.”

Table 9

Impact of Reflection on Learning for Control and Experimental Groups

Do you think the reflective work was important to your learning? Why or why not?	**Control**	**Experimental**
Yes	7	11
Yes, but…	2	2
No	1	0

The “Yes, but…” category of answers shed light on the difference in complexity between the two groups. One answer from the control group said, “I think reflective work was important to look and see what you have done. However, I wouldn’t say it was super important to my learning.” The other said that although it was nice to “compare those reflections with the instructor's feedback later” s/he didn’t think it was “necessary to spend more time on reflections than we did in this semester.” In both cases these students highlighted benefits of reflection – “see[ing] what you have done” and “compar[ing] those reflections with the instructor's feedback later,” but neither thought that those activities related to their learning.

The middle-ground responses from the experimental group were more complex because the students found the reflective work to be important to their learning, but

wanted to share *their own theories* about how reflective writing should happen in the classroom. One student wrote,

> Reflective work should be a little down the road when you can actually pause, re-read your work, then reflect on what you wrote. You don't reflect on something you did 10 minutes ago, your mind is still busy trying to move forward, but a few days after you might look back and think, "Wow, that was stupid of me."

Another student wrote,

> [Reflection] opens my eyes and changes my viewpoint. Sometimes I learn things, other times, it just emphasizes what I already know. This is how I learn things, and I go back and see if I can add this new knowledge to the essay. [But] I do not believe reflective work needs to be so detail oriented and time consuming, it should be short and to the point. The real work is what is added back into the essay.

The difference in complexity extended even into the affirmative answers in each group. Six of the thirteen (46%) of the experimental group responses made statements that demonstrated a mature comfort with cognitive dissonance about reflection. Two of the students said that they did not find reflection useful, but they enjoyed it, while four of the students said that they found it useful, but did not enjoy it. They wrote things like, “I don't think the rhetorical stories were valuable to my learning, but…I did enjoy writing the[m] because they could be done quickly and easily.” Another wrote, “Honestly, although reflective work can be beneficial, I hate doing it.” And yet another wrote, “Although I'm not fond of the reflection essay, I can see where the need is to gage [sic] students improvements.”

Overall, the responses in the control group were generally brief and matter-of-fact. They wrote things that suggested complexity but did not explore it such as, “I think reflective work was important to look and see what you have done. However, I wouldn’t say it was super important to my learning.” Or they wrote answers that suggested that it was only useful in particular circumstances, such as this: “I think the reflective piece was helpful to me whilst writing the lifeplace, because it gave me ideas about what to talk and write about.” In fact, the student who wrote the most complex response to question number two was the student who did not understand the relationship between reflection and the writing process, writing,

> I don't believe reflective work is as important to my learning experience. Reflection comes after writing, which is something I don't like to do: look at past work. When I finish and polish off a work, I like to think it's complete and therefore no other thought should go into it. Reflection makes me want to change a thought or opinion, which makes my paper unorganized, which is my biggest issue to begin with.

In contrast, so many of the experimental students wrote complex answers to question number two, that the researcher began to further break down the quality of the complexity into two categories, description and theorizing. Seven of the 13 students included a description of the reflective activity as well as a discussion of the purpose of the activity. In the following example, the student described the purpose of two different kinds of categories of reflective work s/he completed:

> The rhetorical stories for our essays were the major reflection we had to do in this class. It gave us a chance to look back and evaluate what/how we did our essays.

It also gave the students the opportunity to explain certain points to the teacher. Some of the smaller reflections were on readings or videos watched in class. These reflections were answering a question usually pertaining to why a person said or wrote what they did.

This next student example was one of many similar descriptions. Like the majority of the students in the experimental class, this student described the purpose of the rhetorical story when s/he wrote, "This semester we did reflection work in the form of rhetorical stories after each essay. Each of these gave us an opportunity to discuss our thinking as a writer and how we reflected our thoughts in our essay."

The presence of the description of purposeful reflection in the experimental class was notable because it added complexity to the responses, but also because it highlighted a more sophisticated awareness of their task in writing the exit reflection. The specific task of the exit reflection was to reflect on reflection for the researcher, not the teacher. The additional reflective descriptions of purpose show that the experimental students had a heightened sense of writing to an audience (the researcher) because they were including information their original audience (their teacher) already knew. In contrast, it is possible that the control group included less information because they assumed that the exit reflection was going to function much like their other reflections—as a kind of informal correspondence with the teacher.

The second category of complexity in the responses from the experimental group, the ability to theorize about reflection, also suggests that the students understood their final reflective task as something other than a personal correspondence with the teacher. Nine out of the 13 students in the experimental group had very clear opinions about how

they viewed the role of reflection in the classroom. They thought that it should not "be turned in at the same time the actual work is due," that spoken reflection should be a part of class because "being able to discuss ones own work is important because it is a time to justify why ones (sic) writing is significant," and that reflective work does not "need to be so detail oriented and time consuming, it should be short and to the point." One student's comment captured the spirit of many of the responses when s/he wrote, "Although I do not think reflective work will make someone a better writer, I think it is a good opportunity to be open about your writing." The students' urge to express their own opinions, ideas, and suggestions about reflection sends a powerful message about the kind of student agency that was fostered in the experimental classroom.

Summary of end-of-semester analyses

The student responses to specific exit questions tell an important story about the students' awareness of their reflective experiences and their ability to talk about reflection with specificity and complexity. Not only did the experimental group write twice the number of words per student, but they also exhibited more awareness about their reflective work and a stronger ability to express their thoughts with specificity and complexity. While the control group's responses largely showed that they viewed reflection as a discreet activity that was limited to specific tasks, the experimental group's responses showed that they viewed reflection as a cognitive activity that could be engaged in a wide variety of circumstances, across activities through the semester. Furthermore, the experimental group members demonstrated the ability to rhetorically distance themselves from the learning in order to theorize about the importance of

reflective work and/or to acknowledge that while they might not have enjoyed reflective work, it was important to their learning.

Teacher Reflection Results

Reflective artifacts were also collected from the teachers of these sections. The teacher of the control group and the teacher of the experimental group were asked to complete short reflective responses at the beginning, middle, and end of the semester. The teacher reflections were designed to help the researcher understand the teachers' positions in response to reflection as well as their fidelity to the curriculum and the experimental praxis. At the beginning of the semester, the teachers were asked, "Based on your experience as a teacher, what role do you think reflection plays in learning?" At midterm the teachers were asked "What does reflective writing look like in your class this semester? How are the students responding to it? How are you engaging with it as a teacher?" At the end of the semester the teachers were asked "What kinds of reflective work did your students complete this semester? What role do you think the reflective work had in your students' learning this semester?"

The initial question answered by the teachers, "Based on your experience as a teacher, what role do you think reflection plays in learning?" elicited very similar responses. Both teachers believed that reflection was vital to learning in the writing classroom. The control group teacher wrote, "student reflection is essential for developing and internalizing ideas." He continued his thought by explaining that he believed that reflection was closely tied to critical thinking. He wrote,

> Critical thinking is a kind of reflection—to think critically, students must question paradigm, modes of thinking, messages that are projected upon them. Thus, to

> truly learn—to internalize, interact with, and apply knowledge to the world as a matter of responsible right-relatedness—requires student reflection.

However, he also added that he believed that reflection should not be "forced" but rather, that the "curriculum needs to be designed so that critical thinking occurs as a matter of curiosity."

The experimental teacher agreed that reflection was "extremely important in the WRIT 101 classroom" because it "helps students become more aware of themselves and their development." She added, "I think that reflection forces students to be aware of what they are learning and hopefully gets them to see their writing as their own inquisition rather than just the fulfillment of a project for me, the teacher." However, beyond the benefits reflection could offer each learner internally, she argued, "reflective work can also be a major conduit of communication between the teacher and student."

The teacher's thoughts about reflection from the beginning of the semester show that both of them valued reflection in their classrooms because they believed that reflection helped their students become better thinkers and more aware learners. Furthermore, the control group's teacher's comments about not believing in "forcing" students to reflect supports his selection for the control group since the reflective work was not forced, though, as with all WRIT 101 courses, it was written into the required curriculum.

At mid-semester, the teachers were asked to reflect on the kinds of reflection happening in their classrooms. They were asked to answer the following questions, "What does reflective writing look like in your class this semester? How are the students responding to it? How are you engaging with it as a teacher?" The intention behind these

questions was to ensure that both teachers were teaching the kinds of reflection work they had agreed to teach. The control teacher was supposed to be teaching the reflection required by the WRIT 101 curriculum, which included fastwrites, invention prompts, workshops/peer reviews, and postwrites after each major paper. The experimental teacher was also supposed to be assigning the same activities, plus the rhetorical story assignment for each major inquiry assignment.

The teacher of the control group reported that he had assigned "postwrites for each paper and free-writes as check-ins during regular lesson days." In addition, he assigned "a 'place journal' this semester so students [were] required to engage in reflective writing regarding their relationship as humans to the world." He wrote that the students were responding to the reflective work in the way he had expected; they were taking it seriously, but that they tended to "to address the more superficial aspects…without getting to the deeper issues of what needs to be done or why a certain aspect of their paper is lacking." The control group teacher wrote that he was engaging with the reflections by using them as the groundwork for responding to their papers; he found that engaging and useful because it "allow[ed] [him] to meet the writer at a common talking point, [his] advice [could] be more direct and [was] most likely more easy for the student to accept."

The mid-semester reflection from the teacher of the experimental group was quite different than the control teacher's in terms of content and direction. Rather than directly recount the kinds of reflective work, the experimental teacher leapt directly into sharing her observations about the students interacting with the rhetorical story. By the time she wrote this second reflection, the students had completed three rhetorical stories and she

was eager to make two particularly prescient observations. First, the teacher said that it had been quickly apparent that "perhaps predictably…good students produce good reflective work, and often struggling students (or students who simply don't put in as much effort), also struggle with the reflective work (or simply produce subpar reflective work)." She said that this caused her interaction with the reflection to change; she was less able to use the weaker reflections as a direct avenue into commenting on the students' papers. However, she also appreciated that the rhetorical story often showed her another side of the student's finished product and many times she used that to ask them "why didn't you include that in your paper?"

The experimental teacher was also eager to share another observation about the way the students' rhetorical stories themselves were evolving as the semester progressed. Primarily, she "noticed over the course of the semester…that the students' understanding of their own work has become less reliant on me." In order to provide evidence to support this assertion, she wrote:

> Whereas the PAE rhetorical stories all referenced me as the audience or me as the reason for the assignment (My audience is [teacher name]; the purpose was because [teacher name] assigned it.), not a single Op-Ed rhetorical story has done so. The students focused more on their motivation for choosing the topic and considered their audience to be people out in the world who disagreed with their stance or just generally needed to be informed. I think that's the most remarkable change I've seen, because I do want the students to work less in the context of "Writ 101" assignment and more in the context of finding their own voice to share with the world.

The divergence between the reflection from the two teachers between the beginning and middle of the semester was striking. The control teacher recounted what he was doing and why, as well as the fact that his students were responding with serious, but "superficial" reflections, but the experimental teacher's reflection was a careful, in-depth series of observations about the relationship between reflection and writing, the window reflection offered her into the gaps in her students' thinking and writing, and the evolution and growth of the students' reflective skills and personal agency. Overall, the control teacher's reflections considered reflection in general, while the experimental teacher pointedly considered her current students' reflections and behaviors.

At the end of the semester, after all grades had been submitted in both classes, the teachers were asked to reflect one last time on how reflection worked in their classrooms. They were asked to answer the following questions: "What kind of reflective work did your students complete this semester? What role do you think the reflective work had in your students learning?"

The teacher of the control group reiterated much of his mid-semester reflection as he recounted the kinds of reflective work the students completed over the course of the semester; that the students had completed fastwrites, postwrites, and the Place Journal. He also added that the class had conducted two in-class discussions about their reflections in their Place Journals and the postwrites because he believed that "Providing a space for the written reflection [to] occur in a verbal context helped to broaden the impact of reflection to engage the students who otherwise would not have taken it as seriously."

The teacher of the experimental section also began by recounting the kinds of reflection she assigned in her course. She listed the four rhetorical stories and added that they had completed numerous fastwrites as well; she specifically highlighted the kinds of fastwrite reflections they completed after workshop. After that though, the rest of her reflection explored the way her students answered their exit questions. She noticed that in their exit reflections they listed many different kinds of activities as reflective and she wondered, "I always called the rhetorical stories reflective writing, so where did students get the idea that everything we do is reflective?" In answer to her own question, she concluded

> So maybe my students were one step ahead of me in their definition of reflective.…It could be productive to see nearly every aspect of class as being somewhat reflective. Perhaps it would help students become more self-analytical and self-critical, rather than waiting to be analyzed or criticized by a figure of authority.

At the end of her reflection she returned to considering her own interactions with the rhetorical stories. She said that she was not sure she had succeeded in responding directly to their work based on the rhetorical story and that she did not think that it saved her time, but that she

> often enjoyed reading the rhetorical stories for the same reason some students enjoyed writing them—they allowed me to read a little more casually, absorb the information without feeling like I had to analyze the structure of the response or the research that went into it, or all of the other things I'm thinking about while

reading a paper. I was able to be more conversant with this more conversant, relaxed version of the student, and that was a nice respite while reading papers.

The divergence between the reflections of these two teachers that began in the mid-semester responses continued to grow in the final reflections. By the final reflection the teacher of the control group mostly reiterated his previous report and reflections while the experimental teacher continued to share new, pointed observations about reflection, learning, writing, and the subtle, ever-changing relationship between students and teachers. One piece of evidence that points toward the experimental teacher's growing interest—and the control teacher's waning interest—in a conversation about reflection is the word count of their reflections. While the experimental teacher wrote more on every reflection, and while word count does not necessarily correlate with the strength of the content, the experimental teacher's final reflection was by far the longest while the control teacher's dropped off at the end. For the second reflection the experimental teacher wrote 514 words while the control teacher wrote 316. For the final reflection, the experimental teacher wrote 880 words while the control teacher wrote 235.

Summary of Teacher Reflection Results

The control and experimental group teachers both responded to specific reflective prompts throughout the semester. The primary purpose of the reflections was to ensure that both teachers were assigning reflection to their students in the agreed-upon ways for the purposes of this study. An analysis of the teacher reflections showed that both teachers very nearly assigned the agreed-upon reflective work. The control group teacher was supposed to assign the same reflective work integrated into the common WRIT 101 curriculum, which included fastwrites, workshop reflections, postwrites, and the portfolio

introduction. The control group teacher did assign all of those works, but he also assigned a Place Journal, which was reflection intensive, and he held two in-class discussions about the nature of reflection. The Place Journal and the class conversations resulted in additional class time and student attention being devoted to reflection.

The experimental teacher was supposed to teach all of the same reflective assignments—the fastwrites, workshop reflections, postwrites, and portfolio introduction—and add the rhetorical story. However, in her final reflection she said that she did not assign very many of the standard reflective work because she did not want to "overwhelm [the students] with sheer quantity of reflective work." Instead, she hoped "that they would take the rhetorical stories more seriously if they didn't feel like they were simply repeating themselves all the time." As a result, the experimental group spent less class time and less student attention on reflection than the researcher intended.

However, analysis of the teacher reflections from throughout the semester show that the experimental teacher's own curiosity and interest in reflection's role in the classroom continued to grow while the control group teacher's began to wane by the end of the semester. The teacher of the control group met the expectations of the reflective prompts and carefully answered all of the prompts, but by the end of the semester he was mostly repeating what he had written at mid-semester. In contrast, the teacher of the experimental group met the expectations of the reflective prompts, but far exceeded the researcher's expectations in terms of the kinds of observations she made about the relationship between reflection, learning, and writing, and about the students' evolving ability to reflect and become more independent in their thinking and learning. The experimental teacher's curiosity and inquiry about reflection continued to grow and by

the end of the semester she was happy to realize that she thought that "maybe [her] students were one step ahead of [her] in their definition of reflective."

Although the control group teacher had begun the semester by asserting that reflection was "essential for developing and internalizing ideas" he never returned to that idea or offered evidence about whether or not he could see that happen. By the end of the semester he still viewed reflection as something he assigned and that the students responded to "generally as [he] expected." He clearly did value it because he added reflective work to the curriculum, but he viewed it as just one of many kinds of writing a teacher might assign.

Conversely, the experimental group teacher began the semester by asserting "guided reflection is extremely important in the WRIT 101 classroom" and proceeded to develop observations and evidence to support that assertion all semester. She came to see reflection as integral to her relationship with her students. She viewed it as a window into their thinking and cited specific examples of how it worked in her class. She shared one specific example of a student assignment:

> One of my students wrote a very measured Op-Ed about a Walmart (sic) popping up in [name of city] and his Op-Ed itself was very much oriented towards a measured discussion of financial and local effects, but his rhetorical story was a heated diatribe against American culture and our need to have everything available at all times for cheap prices, with no regard for the ethics of production. I found myself really curious about the decisions that he made and was able to advise him in an interesting way about how to get at both of those points in one short paper.

She observed that she thought that her students were becoming more independent and less reliant on her as the sole source of information about their papers and wrote "that was the most remarkable change I've seen, because I do want the students to work…more in the context of finding their own voice to share with the world."

Summary

Many different kinds of data were analyzed in this study in order to study the arc of development in student reflection and writing strength, to analyze the reliability of the IMK, and to understand whether or not the teachers of the control and experimental groups were adhering to the agreed-upon study curriculum.

The results of the inter-rater reliability study were very strong; the Cohen's kappa for the researcher's own internal reliability was 98% (K=.98). The reliability of all three trained coders on a statistical sample was also very high; the Fleiss kappa score was 83% (K=.834) where a score in the range of .81-1.00 is considered "almost perfect" (Landis & Koch, 1977).

Pretest and posttest data were collected and analyzed in order to make observations about student growth in reflective abilities and writing strength. Analysis of the pretest data, which included the scores used to place the students into WRIT 101 and included ACT Writing Scores, SAT Writing Subscores, and University of Montana Placement Assessment scores, indicated that both classes began the semester with equivalent average scores reflecting slightly below-average writing ability.

Posttest data included an analysis of each student's distribution of metacognitive knowledge and a writing strength score. The distributions of metacognitive knowledge were derived from IMK codes and showed that the writing from the experimental group

demonstrated stronger metacognitive knowledge. The results showed that the majority of the writers in the control group write with weak metacognitive distributions. However, the students in the experimental group were overwhelmingly able to write with moderate or strong metacognitive knowledge distributions; only three of the students had a weak distribution while 10 of the 13 students had moderately strong or strong distributions – and nearly half of the class (46%) had strong distributions.

Strong metacognitive distributions also correlated with stronger writing skills. While there were writers of all levels with weak distributions, no Novice writers had moderately strong or strong metacognitive distributions. Also, the majority of the students who were scored as Advanced Proficient writers had moderately strong or strong metacognitive distributions. In terms of writing quality, the control group's writing scored an average of 2.7, which is in the high range of Nearing Proficiency, while the Experimental group scored an average of 3.4, which is in the Proficient range.

Students in both groups were asked to respond to three exit questions. Analysis of these reflections showed that the vast majority of students in both groups thought that reflection was important to their learning. However, students in the experimental group were much more aware of reflection as an activity that happens across learning contexts while students in the control group considered reflection to be a discreet activity limited by assignment context. While control group students gave brief, often vague answers, students in the experimental group offered longer, more complex responses about the context for and purpose of the different reflective activities. They also gave responses that showed rhetorical distancing and comfort with cognitive dissonance and the majority

of the students in the experimental group had very clear opinions about how they viewed the role of reflection in the classroom.

Teacher reflections were also collected throughout the semester in order to understand the teacher's beliefs about reflection and to ensure that they were both teaching the agreed upon reflective assignments. The reflections showed that both teachers began the semester by asserting that they strongly valued reflection in the writing classroom. The reflections also showed that both teachers varied noticeably and diverged from the agreed-upon curriculum; the control group teacher taught more reflective assignments and the experimental teacher taught fewer.

Chapter Six: Conclusions

The exigencies for this study grow from both practical and theoretical roots. Influential educational bodies such as National Council of Teacher's of English (ncte.org), The Common Core State Standards Initiative (corestandards.org), and Council of Writing Program Administrators (wpacouncil.org) emphasize the importance of metacognitive skills yet there is very little clarity (Yancey, 1998) or research (Tarricone, 2011) about how exactly to integrate this work into the writing classroom. Their interest in metacognition undoubtedly grows out of research about the relationship between metacognition and academic performance which show that metacognitive skills correlate closely with a wide variety of other topics of educational interest: personal agency, self-control, intrinsic motivation, executive function, self-concept, and self-regulated learning (Hacker, Dunlosky, & Graesser, 2009).

However, despite these broad-sweeping calls for metacognitive curricula, there is very little research about the impacts of specific pedagogical interventions. The research in this study works toward evidence about the metacognitive effects of specific pedagogical interventions (Tarricone, 2011) and aims to explore and describe "what we reward in reflection" (Yancey, 1998, p. 147). The study involved one specific pedagogical intervention, the rhetorical story, as well as the development and testing of an index for assessing metacognitive knowledge in students' critical reflective work.

This research also grows out of practical exigency: a desire to help teachers meet their educational outcomes. Right now, ambitious teachers can find many diverse ideas about teaching metacognitive skills, but they have very few tools for deciding which of

them to engage. In a time when conversations about educational hours, standardized testing, and teacher compensation are in a heated conversation, many teachers are hesitant to integrate new objectives into their already-packed curricula. Teachers know they need to develop classrooms and curricula that foster metacognitive growth but they need the empirical evidence to prove that the extra work it would take to build a curriculum is worth their—and their students'—time.

The purpose of this study was to explore the impact of one method of assigning and responding to critical reflective work—the rhetorical story praxis—on metacognitive growth of students in a First Year Composition (FYC) course, College Writing 1, during a 16-week semester. The research was guided by two research questions. The first research question was, what, if any, are the differences in metacognitive complexity between students who have learned to write rhetorical stories and students who have not? The second research question was what does metacognitive development look like in student writers?

Findings

In order to assess metacognitive complexity in critical reflections, the researcher created the Index of Metacognitive Knowledge in Critical Reflective Writing (IMK) based on Tarricone's Taxonomy of Metacognition (2011). The IMK was designed to help translate metacognitive discourse into rhetorical discourse in order to be able to identify traits of metacognitive knowledge in critical reflective writing. The IMK designated individual sub-traits for each of the three kinds of metacognitive knowledge and was used to code each sentence of the students' portfolio introductions. The index also included two categories for sentences that did not convey metacognitive knowledge.

The results of the inter-rater reliability study show that the IMK is a highly reliable index that could be applied by teachers and administrators. According to Landis and Koch (1977) a Fleiss kappa score in the range of .81-1.00 is considered to be the highest degree of agreement and is labeled "almost perfect" (p. 165). The Fleiss kappa score for all three scorers in this study was .834 or 83.4% agreement. If the sentences being analyzed are considered in their original context (i.e., not coded individually or removed from their original context) and the coders are properly trained, the IMK could potentially offer a vital tool for educators who need to assess the metacognitive complexity of their students.

The IMK is the first assessment tool of its kind because it translates metacognitive discourse into rhetorical discourse. The intersection of the metacognitive and rhetorical discourse allows writing teachers a framework in which to assess and describe the quality of the metacognitive complexity as it relates to the writing quality. Although teachers of writing know that writing and thinking are intimately linked (Bean, 2011), many struggle to acknowledge the thinking they read within the writing, especially when the thinking is stronger than the writing. The IMK can also provide researchers with a way to assess and describe the developing complexity of their students' thinking in response to other pedagogical interventions.

Perhaps the most important potential future role for the IMK could be that it can help writing teachers assess and describe their observations about critical reflective work in the writing classroom. Yancey (1998) wrote, "*the function of reflection in an assessment context isn't entirely clear*" (p. 145) and concludes, "no one really knows what we reward in reflection" (p. 147). If this is true—and Yancey's professional

renowned coupled with the researcher's anecdotal experience and collegial conversation supports suggests that it is—then the IMK could help teachers have a clearer picture of what they currently assess as well as what they would like to assess. The IMK offers reliable language from which teachers and administrators could build concrete metacognitive outcomes and rubrics for classroom use. The translation of the IMK's language into rubrics could add vital detail to existing outcomes, which simply suggest the importance of metacognitive development (www.ncte.org/positions/statements/writingbeliefs). Finally, if the language from the IMK is translated into outcomes and rubrics, it will also become a tool for communicating specifics to students so that they, too, can actively work toward demonstrating metacognitive complexity in their critical reflective writing.

Metacognitive complexity.

The IMK was vital in answering the research questions that framed this study: what, if any, are the differences in metacognitive complexity between students who have learned to write rhetorical stories and students who have not? The results of this study show that students who were taught using the rhetorical story praxis absolutely demonstrated more highly developed metacognitive complexity.

Analysis of the pretest data showed that both the students in the experimental and the control groups began the semester at virtually exactly the same level of writing proficiency; and both groups began on the weaker end of the spectrum of writing abilities. Analysis of the metacognitive complexity demonstrated in the portfolio introductions shows that 46% of the students in the experimental group showed strong metacognitive complexity compared to none of the control group. On the other end of the

spectrum, 23% of the students in the experimental group demonstrated weak metacognitive complexity compared to 72% of the students in the control group.

The implications of these findings are exciting. Strong metacognitive complexity, or a relatively balanced distribution of the three kinds of metacognitive knowledge, is indicative of students who have the skills to be stronger learners (Pintrich, 2002). Pintrich (2002) described the importance of the integration of the three kinds of metacognitive knowledge. He wrote "Metacognitive knowledge includes knowledge of general strategies that might be used for different tasks, knowledge of the conditions under which these strategies might be used, knowledge of the extent to which the strategies are effective, and knowledge of self (Pintrich, 2002, p. 221). If one of these areas is markedly weaker than the others, the student's ability to negotiate the learning situation is weakened. For example, if the student's declarative knowledge (or knowledge of the task) is weak, the student cannot adequately understand which of her own strengths and weaknesses to apply; she also cannot then, understand appropriate strategies for negotiating the task. From a second angle, if the student understands the task, but does not understand which possible strategies might be relevant (procedural knowledge), she will have a very difficult time choosing an appropriate set of strategies. Finally, from the third angle, if the student understands the task, understands the role her own strengths and weaknesses play, and understands possible strategies, but does not understand how all of these fit together (conditional knowledge) she will likely struggle to employ the appropriate strategies in the appropriate context.

Writing teachers see evidence of imbalances in metacognitive knowledge in writing samples often, but most think of them as specific kinds of poor writing choices

rather than seeing them as evidence of weak metacognitive skills. It is quite common for students to apply writing strategies that are inappropriate for the given writing assignment or task. For example, in a research assignment that requires students to integrate personal experiences, students in the First Year Composition courses (FYC) at the University of Montana will routinely neglect to add any personal experiences or voice despite having spent 3-4 weeks exploring ways to integrate them into their research paper. Teachers sometimes interpret this lack of personal integration as students being lazy (not paying attention to the assignment), belligerent (making a conscious choice to leave it out despite the assignment), or incompetent (they are unable to integrate the research and personal elements). From a metacognitive perspective, however, one can see that while some of the previous observations might be true, it is more likely that the student simply applied a writing strategy that has worked in previous classes and on previous assignments where they were asked to write in a formal research voice *without* any personal information. The student has applied a strategy that worked in a previous task, but is not appropriate for the current task.

The implications for understanding writing choices as possible weaknesses in metacognitive complexity are very important. If teachers think of their students as lazy, belligerent, or incompetent, they can find it difficult to know how to proceed. Should teachers fervently remind the "lazy" student of the requirements of the assignment? Should they threaten the "belligerent" student with a lower grade? Should they assume the "incompetent" student needs more help and suggest they need tutoring? Although all of these tactics could be questionable in their own right, the more important things to consider are the potential consequences of responding this way to "lazy," "belligerent,"

or "incompetent" students who are not actually lazy, belligerent, or incompetent. If a teacher treats a student as though he is lazy when he has, in fact, put a great deal of thought and care into the assignment, he is unlikely to feel motivated to work on revisions or future papers. If, however, the teacher can understand the student's lack of personal voice (for example) as a gap in the student's metacognitive knowledge, then both the teacher and the student have a positive way to move forward. The teacher has the language with which to help the student understand his own writing choices and can offer an explanation for why the student might have made the mistake and the student can begin to see how different writing strategies might need to be employed in different writing situations. In this way, the teacher can help reveal the student's own thinking to him (Bruner, 1991). In fact, there is no downside to teachers viewing writing choices through the lens of metacognitive complexity. Although lazy or belligerent students obviously exist, metacognition offers a discourse through which teachers and students can have clear, productive conversations about rhetorical situations, genres, and writing choices.

Another implication of strong metacognitive complexity is that is predisposes students to improved learning transfer. Learning transfer is an important concern in all learning situations, but it concerns FYC pedagogy in crucial and defining ways. Although there are localized learning objectives in a FYC course, one of the larger objectives of the course is to teach skills in writing, research, and that the students will afterward be able to transfer to their future writing situations in other courses. Nelms and Dively (2007) found that in order for students to transfer knowledge they have to reach a crucial level of abstraction. They write, "This requirement of generalization…makes metacognitive

reflection, the ability to reflect on one's choices and decisions, especially integral to knowledge transfer" (p. 218). One of their conclusions is that teachers and Writing Program Administrators should create curricula that predispose students to knowledge transfer by engaging "more metacognitive reflection on writing processes, on rhetoric, and on applications of writing strategies" (p. 228).

Students who demonstrate strong metacognitive complexity in their critical reflective writing are more predisposed to transfer their understanding of their own strengths and weaknesses as writers as well as their understanding of appropriate writing strategies for a given writing situation. In reference to the three major kinds of metacognitive knowledge (declarative, procedural, and conditional), Pintrich (2002) wrote, "Metacognitive knowledge of all these different strategies seems to be related to the transfer of learning" (p. 222). Strong metacognitive complexity means that students have demonstrated an integration of the three kinds of metacognitive knowledge and strong integration leads to the vital level of abstraction described by Nelms and Dively (2007). The ability to generalize learning or writing strategies from one situation to another not only predisposes students to perform better in future writing situations, but it improves their writing ability as well.

Writing quality.

One major finding of this current study is that strong metacognitive complexity is clearly related to stronger critical reflective writing skills. Many researchers have studied the relationship between thinking or reflection and writing ability (Bean, 2011; Emig, 1971; Flower & Hayes, 1981/2011; Harris, Graham, Brindle, & Sandmel, 2009) but none have analyzed the relationship between demonstrated metacognitive complexity and

writing ability. The researcher used University of Montana's University-wide Program-level Writing Assessment (UPWA) Holistic Rubric to assess the quality of each writing sample. The rubric is based on concepts such as sense of purpose and audience, organization, ability to synthesize ideas, writing style that is appropriate for purpose and audience, and grammar and mechanics. Based on these characteristics, a paper can be coded with a score of 1 (Novice), 2 (Nearing Proficiency), 3 (Proficient), or 4 (Advanced Proficient).

An examination of the UPWA scores and the metacognitive distributions of the portfolio introductions in this study showed that students with stronger metacognitive complexity also earned higher scores for writing ability. First, while there were writers of all levels with weak distributions, no Novice writers had moderately strong or strong metacognitive distributions. Also, the majority of the students who were scored as Advanced Proficient writers had moderately strong or strong metacognitive distributions. The control group writing scored an average of 2.7, which is in the high range of Nearing Proficiency, while the experimental group scored an average of 3.4, which is in the Proficient range. There was a statistically significant difference between the writing scores for the two groups (α=.09), however the low sample size in this study suggests the need for a larger sample to see if the results are robust. Nevertheless, the metacognitive levels of the experimental group is echoed here by the group's strength in writing ability.

The difference in average writing scores between the two groups of students is worth remark. Analysis of pretest data taken from all students' placement scores showed that all of the students in both groups began the semester at nearly identical levels of proficiency. It also showed that they began with writing skills on the weaker end of the

writing spectrum. The fact that the scores from the University of Montana's University-wide Program-level Writing Assessment (UPWA) rubric show that the students in the experimental group are "Proficient" writers is impressive because the UPWA rubric is actually intended to assess students who have completed a *second* college writing course. The fact that these students performed as Proficient writers after a one semester writing course demonstrates that their writing gains were actually more dramatic than the term "proficient" might communicate. Essentially, it means that after one semester of college writing, they can demonstrate writing skills that teachers expect to see from students who have had twice as much writing instruction.

The rhetorical story.

If this one metacognitive pedagogical intervention, the rhetorical story, can prepare students to be stronger writers and predispose them to improved learning transfer, then the results of this study are notable. The students in the experimental group did not receive more help on their writing. They did not have more opportunities for revision, more meetings with the teacher, or different assignments or standards by which the teachers assessed the writing. The only major variable in the experimental curriculum was the rhetorical story.

The rhetorical story's impact on the metacognitive complexity and writing quality is clear, but the praxis also had other impacts on the students in the experimental class. Analysis of the students' reflection at the end of the semester showed that the students in the experimental class wrote twice as many words than the students in the control class in the same amount of time. The wrote 1,932 words (or an average of 149 words per response versus 725 words (or an average of 72 words per response).

Word count alone is not reliably indicative of stronger writing, but in this case, the extra words in the experimental student responses allowed them space to develop their reflections with more specificity, detail, and agency. When asked to list the kinds of reflective activities they performed over the course of the semester, the control group's responses were straightforward. The majority, 60% (6), of the students only listed a single reflective activity from over the course of the semester while 20% (2) of the students were unable to list a single reflective task they completed. This last piece of data is particularly notable because they were unaware of having engaged in any of the required reflective activities throughout the semester, including the postwrites that most students mentioned.. In contrast, 77% of the students in the experimental group listed more than one reflective task; within that group, 15% listed three or more reflective tasks. There were no students who could not list a reflective task.

The experimental students' ability to identify more reflective tasks only tells part of the story. The diversity and complexity of their responses also illustrates the depth of their understanding about the myriad ways reflective work happened during the course of their semester. While students in the control group listed single, discreet reflective activities (such as "the postwrite after my op-ed"), the students in the experimental group listed activities that took place throughout the course of the semester; in terms of metacognitive knowledge, this shows conditional knowledge, or finding connections between activities across the semester. They cited abstract activities that happened in many contexts, such as "revision," "editing," "reading," "talking," or "workshop." The experimental group also offered noticeably more detail about the requirements or purposes of the reflective activities and often justified why they thought the reflective

work was useful. No students said that they thought the rhetorical story was a waste of time; all said something positive about the assignment.

Perhaps the most promising conclusion to draw from the analyses of the end-of-semester reflections is that the rhetorical story led students to offer responses that demonstrated a very mature level of intellectual independence and agency. The students in the experimental group offered responses that showed an acceptance of cognitive dissonance by explaining that they might not have liked the rhetorical story, but they could see that it was helpful; conversely, other students explained that they didn't think it was useful, but that they enjoyed writing it. Teaching students that their own experiences and opinions do not necessarily define the success of a learning activity is difficult, but these students seemed to have understood it well. They also demonstrated more personal agency in their responses when they offered their own theories about how they thought reflective work ought to happen in a writing classroom. While the control group students seemed to simply recount which activities they had completed, the experimental students' ability to describe their understanding of the purpose of the activities as well as how they think the activities should be revised shows a clear sense of ownership over their learning in the writing classroom.

Although there are other reflective assignments teachers can engage, the strength of the rhetorical story grows out of its ability to help students understand that a rhetorical situation is simply one kind of problem solving situation they might encounter in learning. Theorists in metacognition and writing studies both know that students must be able to understand the elements of their particular situation before choosing strategies for negotiating the situation. Writing studies theorists call this understanding the rhetorical

situation while metacognitive theorists call it task knowledge, and this is where two fields come together: the rhetorical situation of a writing assignment is *a particular kind* of problem-solving task. The rhetorical triangle fits inside the metacognitive triangle as shown in the figure below to create the meta-rhetorical triangle.

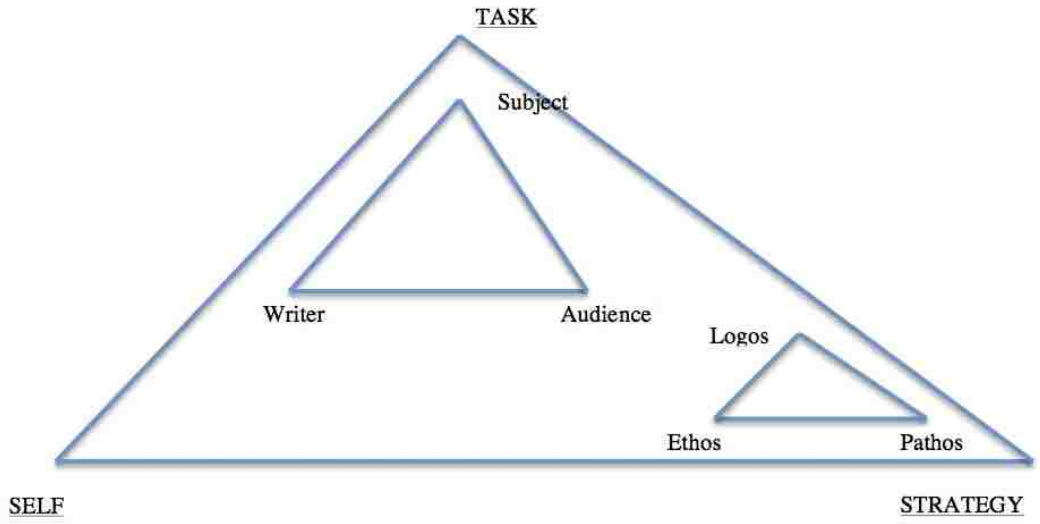


Figure 8. The meta-rhetorical triangle recontextualizes the basic conceptual triangles in the fields of rhetoric and metacognition in order to re-envision the connection between the two fields.

The meta-rhetorical triangle offers a concrete illustration of the relationship between the basic theoretical frameworks in metacognition and writing studies. The *subject* is aligned with the *task* because the subject of the writing aligns with the guiding task and the *writer* is aligned with the *self* because the writerly identity is one facet of a

larger sense of self or self-knowledge. However, audience does not align with strategy because audience is the other element a writer must understand before choosing a strategy; therefore, it is in the center of the triangle rather than the right side. In the strategy corner, however, the meta-rhetorical triangle includes the three Aristotelian strategies for persuasion, logos, ethos, and pathos (Rapp, 2010). When the conceptual frameworks for rhetoric and metacognition are viewed as nested triangles this way, it is possible to see that the rhetorical situation offers specifics about how metacognitive knowledge supports a particular kind of problem-solving in writing situations, while metacognitive frameworks could help students generalize their metacognitive knowledge beyond writing situations.

Metacognitive development in writers.

The second research question guiding this research asked, what does metacognitive development look like in student writers? Analysis of the end-of-semester portfolio introductions and end-of-semester reflective artifacts from students in both groups offers clear evidence that can contribute to a developing understanding of what metacognitive development looks like in student writers who are students in FYC courses. Based on the findings related to the experimental group of students, metacognitive development is expressed in a variety of complex ways. In the end-of-semester reflections, students with the stronger metacognitive complexity wrote longer, more specific, more diverse, and more detailed reflective responses. They tolerated cognitive dissonance and their responses communicated that they were able to hold two conflicting ideas in mind comfortably. They also exhibited pronounced intellectual

independence and personal agency as they sought to explain their own developing theories about how they believed reflection ought to happen in the writing classroom.

Analysis of the portfolio introductions written by students in the control and experimental groups showed that stronger metacognitive complexity corresponded with stronger writing skills. Pretest data showed that students in both groups began the semester at the same lower level of writing proficiency. By the end of the semester, the students in the experimental group demonstrated remarkable growth. Although they had just completed their first semester of college writing, the experimental group's average writing scores located them as proficient *second* semester college writers.

These conclusions about the characteristics that might begin to frame metacognitive development in writers draw a picture of students who seem positioned to transfer reflective knowledge into their future classes. Students who take ownership over their learning, demonstrate agency in their engagement with the work, and who have the writing skills to express their developing questions, ideas, and theories are some of the important characteristics of students who are prepared as learners.

The power of the rhetorical story.

Analysis of the teachers' reflective documents shows that there is evidence to suggest that the rhetorical story could replace some of the other, less formal reflective pieces in a curriculum. Because the teacher of the experimental group had been worried about overwhelming her students with reflective work, she did less of the informal reflection in the form of fastwrites, invention work, and postwrites in order to keep the students' attention and energy high for the rhetorical story. In contrast, the teacher of the control group added more reflective activities and conversations about reflection, even

going so far as to conduct classroom discussions about reflection. In short, he spent more energy and class time on informal reflection while the experimental group teacher spent almost none, effectively isolating the students' reflective work to the rhetorical story. Despite the lack of continued classroom activity and conversation about reflection, the students in the experimental group still showed clear growth in metacognitive complexity and writing ability.

From these results we might draw initial conclusions about the qualities of reflective work that impact students' complexity of metacognitive knowledge. The informal reflections completed by the students in the control group were often done very quickly, were not usually collected, and were not responded to by the teacher. As is usually the case in the FYC program, the students were given a question or idea and asked to respond, they were asked to brainstorm topics or questions for their upcoming assignments, or they were asked to consider a discussion, draft, or workshop event. However, the rhetorical story praxis takes quite nearly the opposite pedagogical place in the students' writing process. The reflection was in response to a formal assignment; it was anticipated along with the primary assignment (rather than spontaneously assigned in class); it was required; it was composed outside of class; the student could take as much time as s/he needed; and the teacher responded directly to it. These results confirm previous metacognitive research about the structural elements of successful reflective assignments (Clark, Kirschner, & Sweller, 2012; Tarricone, 2011) and now show that they also improve writing ability.

A second possible conclusion about the power of the rhetorical story has to do with its role in learning transfer. It is possible that one of the reasons that the students in

the experimental group showed a stronger ability to generalize is that in writing the portfolio introduction, they were not only demonstrating their critical reflective abilities, but they were practicing what Yancey (1998) called *reflective transfer*. The assignment for the rhetorical story was very different from the portfolio introduction; although both assignments were in the critical reflective genre, they varied in language and spirit. So although the students had received no feedback about *how* to write the genre of a critical reflective piece, they learned the actual skill of critical reflection. This happened because the rhetorical story provided a platform for the teacher to give the students feedback about not only their progress toward achieving the outcomes of the primary writing assignment, but about how accurately they had assessed their own strengths, weaknesses, their understanding of the task, and their strategies for navigating the task. In other disciplines, perhaps those that are more testing based, the learners can review a test and get feedback about whether or not they studied efficiently. They can also see how well they answered each question and assess whether or not they are stronger at multiple choice, matching, or short answer questions.

In FYC writing classes, it can be more difficult for students to make these observations on their own because each assignment can be a completely new task. Students are often unable to accurately predict how well they have met the outcomes of an assignment since they are usually referring to how well they have done in high school. Since writing well is very much rooted in understanding the writing situation and choosing appropriate strategies, students need direct feedback about how well they understood themselves as writers in the task, how well they understood the requirements of the task, and whether or not their writing strategies had the effect they were hoping for.

By offering metacognitive feedback, the rhetorical story provides students with feedback that is about the student's thinking as well as the writing.

Conclusions

Implications.

There are many important implications of these conclusions about the rhetorical story's impacts on metacognitive complexity, as well as the impacts of metacognitive complexity on writing quality. Teachers and writing program administrators of FYC programs can benefit from these conclusions in a number of ways. The power of the rhetorical story offers teachers and curriculum directors a new understanding about how to assign critical reflective work in order to impact positive metacognitive growth. Put simply, their curricula should include the rhetorical story praxis of assigning and responding to student writing. They should provide students with the kinds of feedback that help them develop their metacognitive skills as well as—or at the same time as—their writing skills. Although it may seem like these are two separate kinds of feedback, the results of this study show that it does not require two kinds of feedback because responding to the rhetorical story allows the teacher to create a conversation that intertwines metacognition and writing; when a teacher uses the rhetorical story for his platform for a response to writing, he is teaching the student about the relationship between the rhetorical situation and writing choices through the vehicle of metacognitive conversation.

The findings and conclusions about the Index for Metacognitive Knowledge in Critical Reflective Writing (IMK) also carry important implications for teachers and writing program administrators. Because there has never before been an index like the

IMK, its ability to help teachers understand, describe, and assess students' metacognitive complexity through their writing offers field-changing implications. Many teachers are either asked to meet metacognitive outcomes or would like to meet them because they know that improved metacognition is linked to many characteristics associated with strong learner identities and academic success (Hacker, Dunlosky, & Graesser, 2009). However, until now, they have not had a way to assess whether or not they were meeting those outcomes.

The IMK is a tool that provides teachers with a map by which to translate writing choices into metacognitive complexity. It gives them a new way to understand their students and help the students understand their own thinking; the IMK gives language to a conversation that can begin to help the students map their own writing processes by breaking down the "allatonceness" (Berthoff, 1990, p. 86) of writing into a series of decisions.

The IMK also carries important implications for the discipline of writing studies and for research about writing and writing program administration. The IMK gives researchers a discourse in which to build program outcomes that are more specific than to understand "ways of assessing student metacognitive process of the reading/writing connection" (www.ncte.org/positions/statements/writingbeliefs); the IMK is also an assessment tool by which they can assess student development. The IMK reengages the portfolio introduction as a vital piece of writing that is valuable for research, rather than for final grade assessment alone. The ability to assess critical reflective work also affirms its importance in the writing classroom. In an educational atmosphere inundated with assessment, teachers and administrators often find it difficult to defend pedagogical tools

that cannot be assessed. The fact that the IMK allows teachers, administrators, and researchers to assess critical reflection could provide the framework for paving a solid future for critical reflective work in the writing classroom.

Both the IMK and the rhetorical story can also be vehicles for future research in writing studies and writing program administration. The IMK allows for the assessment of the student thinking that informed her writing choices, something that has previously been very difficult to characterize or assess separately from the quality of the writing. Although in this research the rhetorical story was the tested praxis, it, too, could be a vehicle for future research. A researcher could collect student rhetorical stories throughout the semester in order to study the development over time; she could collect the teacher responses to the student writing and analyze the way teachers respond differently when they use the rhetorical story; or she could collect the rhetorical story, the teacher response, and the student revisions to see if the rhetorical story creates stronger initial drafts or stronger revised drafts. Because the rhetorical story offers researchers a window into the way student thinking relates to their writing choices, it could offer a potentially groundbreaking platform for future research.

Recommendations for practitioners.

The conclusions drawn from this research lead to some very clear recommendations for teachers, administrators, and researchers. These practitioners should assign the rhetorical story in their classrooms in order to create a conversation about writing choices and metacognition even if it means that they take away some of the other, less formal reflective work. They should teach students the difference between reflective and critical reflective work, and they should talk directly to students about the

importance of metacognitive knowledge. Finally, teachers should use the rhetorical story to teach students how to break down the "allatonceness" (Berthoff, 1990, p. 86) of writing by understanding that they can think about the task knowledge, self knowledge, and strategy knowledge that will help them navigate any writing or learning situation.

Teachers, administrators, and researchers should use the language from the IMK to build their conversations about metacognition and writing and to frame and assess specific metacognitive outcomes. They should use those outcomes and assessments to argue for critical reflective work in program-wide or English Education curricula or to make arguments for the importance of portfolio-based assessment. In essence, they should use the language of the IMK and the evidence it can produce to argue for the kinds of critical reflective assignments that teachers already often assign, but are unsure how to asses (Yancey, 1998).

Recommendations for future research

The conclusions drawn from this research could lead to many other potential research questions about the IMK, the rhetorical story, and the relationship between thinking and writing. Some potential research questions could be:

- How does metacognitive complexity relate to revision? Were the students' initial drafts stronger or did they do stronger revision work?
- How might an understanding of metacognitive complexity influence how teachers are trained to teach and assess writing?
- How does metacognitive complexity relate to metacognitive monitoring and control? Or, just because students know what to do it doesn't mean that they can or will do it. For example, in portfolio introductions students often

describe the revisions they made on final drafts; future research could explore whether or not the students actually made those revisions.

- Strong metacognitive complexity predisposes students to improved learning transfer, but will metacognitive complexity continue to grow as the students enter their next writing course? Do they actually transfer their learning about writing to their next academic writing situations and genres?
- How does the rhetorical story change the nature of teacher response? When teachers respond to students' primary assignments by responding to the rhetorical story, does it change the nature of their feedback? The voice of the feedback? How exactly do teachers begin their feedback based on the rhetorical story? Are the responses more personal?
- Related to the previous question, but certainly distinct, researchers might explore whether or not the rhetorical story impacts the teacher student relationship. If the conversation about writing feels more personal (as the teacher and some students from the experimental group implied), does it build a stronger bond of trust between teacher and student? Does it allow the student to feel more comfortable taking risks with his writing?
- And finally, how does a teacher's metacognitive knowledge impact her teaching? Does the teacher's metacognitive complexity impact her ability to teach students about metacognitive complexity? Could the use of the rhetorical story improve a teacher's metacognitive complexity as well?

Questions such as these seek to further understand the incredibly complex web of relationships between students, teachers, metacognition, and writing studies. Until now,

many of these questions would be difficult (if impossible) to assess, but the IMK opens the doors for future research at the frontier of metacognition and writing, and answering any one of these questions would enrich our theoretical understanding of the way teachers teach and the way students learn.

Summary

Born from the desire to explore the impacts of metacognitive pedagogical interventions, this quasi-experimental study explored the impact of one specific critical reflective praxis, the rhetorical story. In order to assess the metacognitive complexity in the students' reflections, the researcher created and tested the Index for Metacognitive Knowledge in Critical Reflective Writing. The findings of this study show that the IMK is a very reliable instrument with which teachers, administrators, and researchers can describe and assess the metacognitive complexity in students' critical reflective writing. The IMK is the only instrument of its kind to put metacognition and writing into conversation by translating metacognitive discourse into rhetorical discourse, and its role in the future of research into metacognitive knowledge and writing will be invaluable. The evidence the IMK is capable of producing could empower teachers and administrators in their arguments for their current reflective practices and will certainly open doors to research that until now, has been impossible.

The findings of this study also show that the rhetorical story is a powerful critical reflective praxis that improves students' metacognitive complexity and strengthens their writing quality. Although these first-semester writing students in both the control and experimental groups began the semester at the same level of writing proficiency, the students in the experimental group ended the semester with writing scored as proficient

for *second* semester students; essentially, they produced writing that moved them far beyond FYC expectations and outcomes.

The students who were taught using the rhetorical story demonstrated dramatically stronger metacognitive complexity, which improved their writing, and predisposes them to stronger learning identities and behaviors, as well as improved learning transfer. The end-of-semester reflections written by students in the experimental group showed that they were able to write longer, more specific and diverse reflections that sought to communicate the purpose and intention of reflective activities. They also demonstrated a level of intellectual independence and agency that led them to argue for their own developing theories about how reflective work ought to happen in the writing classroom.

The students in the experimental class excelled and in many ways, exhibited many characteristics of a composite "ideal" student: they understood their assignments and took them seriously; they took ownership over their thinking and writing and understood a purpose beyond "getting an A;" they thoughtfully executed their tasks; and they cared enough about their learning and felt empowered enough in their student role to tell their teacher and the researcher how *exactly* they thought their class ought to work.

It would be faulty to attribute every one of these positive results as an absolute result of the experimental students' work with the rhetorical story. Only more iterations, larger samples, or triangulated research could—and perhaps in the future will—tell for sure. But this research offers a very solid pedagogical place to begin working and for the first time, it gives teachers, administrators, and researchers empirical evidence that supports critical reflective work in their curricula.

Many teachers have longingly joked about wanting to find a magical strategy that would somehow help students engage in their own learning, pay attention to their writing, care about how well their writing works, and feel empowered and confident enough to share their thoughts and ideas about their education. Maybe it's too much to think of the rhetorical story as that panacea, but it certainly seems to have transformed one group of students into excellent thinkers, writers, and learners, and for most of us, that's a very inspiring and exciting place to start.

References

Anson, C. (1994). Portfolios for teachers: Writing our way to reflective practice. In L. Black, D. Daiker, J. Sommers, & G. Stygal (Eds.), *New Directions in Portfolio Assessment: Reflective Practice, Critical Theory, and Large-scale Scoring.* Portsmouth: Heinemann.

Anson, C. (2006). Reflective reading: Developing thoughtful ways to respond to students' writing. In R. Straub (Ed.), *Key works on teacher response: An anthology*. Portsmouth: Boynton/Cook. (Reprinted from C.R. Cooper and L. Odell (Eds.), Evaluating writing: The role of teacher's knowledge about text, learning, and culture, 1999, pp. 302-324, Urbana, IL: NCTE).

Ballenger, B. (2012). *The Curious Writer*. Boston, MA: Longman.

Barton, E. (2009). Linguistic discourse analysis: How the language in texts works. In C. Bazerman & P. Prior (Eds.), *What writing does and how it does it: An introduction to analyzing texts and textual practices*. New York: Lawrence Erlbaum.

Bean, J. (2011). *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom, 2nd Edition*. San Francisco, CA: Jossey-Bass.

Bartholomae, D. (2011). Inventing the university. In V. Villanueva & K. Arola (Eds.), *Cross-talk in comp theory: A reader*, (3rd ed.), (pp. 523-553). Urbana, IL: NCTE. (Reprinted from in M. Rose (Ed.), *When a Writer Can't Write: Studies in Writer's Block and Other Composing Problems*. The Guilford Press, 1985, pp. 134-165).

Becker, A., & Horning, A. (2006). *Revision: History, theory, and practice*. Parlor Press, ebook, retrieved from: http://wac.colostate.edu/books/horning_revision/chapter3.pdf

Belanoff, P. (1991). Freewriting: An aid to rereading theorists. In P. Belanoff, P. Elbow & S.I. Fontaine, (Eds.), *Nothing begins with n: New investigations into freewriting.* Carbondale: Southern Illinois University Press.

Belanoff, P., Elbow, P., & Fontaine, S.I. (Eds.). (1991). *Nothing begins with n: New investigations into freewriting.* Carbondale: Southern Illinois University Press.

Berthoff, A. (1981). *The making of meaning: Metaphors, models, and maxims for writing teachers*. Portsmouth: Boynton/Cook.

Berthoff, A. (1982). *Forming, thinking, writing*. Portsmouth: Boynton/Cook.

Berthoff, A. (1990). The sense of learning. Portsmouth: Heinemann.

Berthoff, A. (2011). Is teaching still possible? Writing, meaning and higher order reasoning. In V. Villanueva & K. Arola (Eds.), *Cross-talk in comp theory: A reader*, (3rd ed.). Urbana, IL: NCTE. (Reprinted from *College English*, *46*(8), (Dec., 1984), pp. 743-755).

Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher*, *34*(6), 3–15.

Brown, A. L. (1987). Metacognitive development and reading. In R.J. Shapiro, B. Bruce, & W. Brewer (Eds.), *Theoretical Issues in Reading Comprehension: Perspectives from Cognitive Psychology, Linguistics, Artificial Intelligence, and Education* (pp. 453-481). Hillsdale, NJ.: Lawrence Erlbaum Associates.

Bruner, J. (1991). Self-making and world making. *Journal of Aesthetic Education*. *25*(1), (pp. 66-78).

Clark, R.E., Kirschner, P.A., & Sweller, J. (2012). The case for fully guided instruction. *American Educator*, *36*, 6–11.

Connors, R.J., & Lunsford, A.A. (2006). Teachers' rhetorical comments on student papers. In R. Straub (Ed.), *Key works on teacher response: An anthology*. Portsmouth: Boynton/Cook. (Reprinted from *College Composition and Communication. 44*(2), (May 1993), pp. 200-223).

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research* (3rd ed.). Thousand Oaks, California: Sage.

Creswell, J.W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Los Angeles, CA: Sage.

Creswell, J.W. (2014). *Research design: Qualitative & quantitative approaches*. Thousand Oaks, CA: Sage.

Cronon, W. (1998). Only connect: The goals of a liberal arts education. *The American Scholar,67*(4), 73–80.

Cozby, P.C., & Bates, S.C. (2012). *Methods in Behavioral Research*. New York: McGraw Hill.

Eisner, E. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice.* New York, NY: Macmillan.

Elbow, P. (1998). *Writing without teachers*. New York: Oxford University Press.

Emig, J. (1971). *The composing processes of twelfth graders*. Urbana, IL: NCTE.

Emig, J. (1983). *The web of meaning: Essays on writing, teaching, learning, and thinking*. Portsmouth: Boynton/Cook.

Faigley, L., Cherry, R., Jolliffe, D., & Skinner, A. (1985). *Assessing writers' knowledge and processes of composing*. Norwood: Ablex.

Flavell, J.H. (1970). Developmental studies of mediated memory. In H.W. Reese & L.P. Lipsitt, (Eds.). *Advances in child development and behavior*. *5.* 181-211. New York: Academic Press.

Flavell, J.H. (1976). Metacognitive aspects of problem solving. In L. Resnick (Ed.), *The nature of intelligence*. New York: Lawrence Erlbaum Associates.

Flavell, J.H. (1979). Metacognition and cognitive monitoring: A new area of cognitive development inquiry. *American Psychologist*, *34*(10), 906911.

Fleckenstein, K. (2012). Reclaiming the mind: Eco-cognitive research in writing studies. In L. Nickosan & M. Sheridan (Eds.), *Writing studies research in practice.* (pp. 86-97). Carbondale, IL. Southern Illinois University Press.

Flower, L., & Hayes, J. (2011). A cognitive process theory of writing. In V. Villanueva & K. Arola (Eds.), *Cross-talk in comp theory: A reader*, (3rd ed.), (pp. 253-277). Urbana: NCTE. (Reprinted from *College Composition and Communication, 32*(4), (Dec., 1981), pp. 365-387).

Flynn, E.A. (2011). Composing as a woman. In V. Villanueva & K. Arola (Eds.), Cross-talk in composition theory: A reader. Urbana: NCTE. (Reprinted from *College Composition and Communication, 39*(4), (Dec., 1988), pp. 423-435).

Freire, P. (1970). *Pedagogy of the oppressed*. New York: Bloomsbury Academic.

Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic Inquiry*. Newbury Park, CA: Sage Publications.

Hacker, D.J., Dunlosky, J., & Graesser, A.C. (Eds.). (2009). *Handbook of metacognition in education*. New York: Taylor and Francis.

Hacker, D.J., Keener, M.C., & Kircher, J.C. (2009). Writing is applied metacognition. In D.J. Hacker, J. Dunlosky & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

Harris, K. R., Graham, S., Brindle, M., & Sandmel, K. (2009). Metacognition in children's writing. In D.J. Hacker, J. Dunlosky, & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

hooks, b. (1994). *Teaching to transgress*. New York: Routledge.

Huckin, T. (2009). Content analysis: What texts talk about. In C. Bazerman & P. Prior (Eds.), *What writing does and how it does it: An introduction to analyzing texts and textual practices*. New York: Lawrence Erlbaum Associates.

Huot, B., & O'Neil, P. (2009). *Assessing writing: A critical sourcebook*. Boston: NCTE.

Kreutzer, M.A., Leonard, C., & Flavell, J. (1975). An interview study of children's knowledge about memory. *Monographs of the society for research in child development*. *40*(1). (Serial No. 159).

Landis, J.R., & Koch, G.G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*(1), 159–174. Retrieved from http://www.jstor.org/stable/2529310

Merriam, S.B. (1998). *Qualitative research and case study applications in education.* San Francisco: Jossey-Bass

Moffett, J. (2006). Learning to write by writing. In R. Straub (Ed.), *Key works on teacher response: An anthology*. Portsmouth: Boynton/Cook. (Reprinted from *Papers of the Yale Conference on English*, 1967, Yale University).

Murray, D. (2011). Teach writing as a process not product. In V. Villanueva & K. Arola (Eds.), *Cross-talk in comp theory: A reader*, (3rd ed.), (pp. 3-7). Urbana, IL: NCTE. (Reprinted from *The Leaflet*, New England Association of Teachers English, November 1972).

Myers, M. (1980). *A procedure for writing assessment and holistic scoring*. Urbana, Illinois: National Council of teachers of English

Negretti, R. (2012). Metacognition in student academic writing: A longitudinal study of metacognitive awareness and its relation to task perception, self-regulation, and evaluation of performance. *Written Communication*, *29*(2), 142–179.

Nelms, G., & Dively, R.L. (2007). "Perceived roadblocks to transferring knowledge from first-year composition to writing-intensive major courses: A pilot study." *Writing Program Administration, 31*(1-2), 214–240. Retrieved from http://www.wpacouncil.org/archives/31n1-2/31n1-2dively-nelms.pdf

Pianko, S. (1979). Reflection: A critical component of the composing process. *College Composition and Communication*, *30*(3), 275–278.

Pintrich, P. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. *Theory into Practice*. *41*(4), 219–225. doi: 10.01207/s15430421tip4104_3

Rapp, C. (2010). Aristotle's Rhetoric. In E. Zalta (Ed.), *The Stanford encyclopedia of*

philosophy. Retrieved from http://plato.stanford.edu/archives/spr2010/entries/aristotle-rhetoric/

Resnick, L. B., & Glaser, R. (1976). Problem solving and intelligence. In L. Resnick (Ed.), *The nature of intelligence*. New York: Lawrence Erlbaum Associates.

Reynolds, N., & Rice, R. (2006). *Portfolio teaching: A guide to instructors*. Boston, MA: Bedford St. Martin's.

Rose, M. (2011). Narrowing the mind and page: Remedial writers and cognitive reductionism. In V. Villanueva & K. Arola (Eds.), *Cross-talk in comp theory: A reader*, (3rd ed.). Urbana, IL: NCTE. (Reprinted from *College Composition and Communication, 39*(3), (Oct 1988), pp. 267-302).

Russell, M.K., & Airasian, P. W. (2012). *Classroom assessment: concepts and applications*. New York: McGraw Hill.

Schön, D.A. (1983). *The reflective practitioner: How professionals think in action.* New York: Basic Books, Inc.

Schön, D.A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass, Inc.

Schraw, G., & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19,* 460–475.

Schraw, G. (2009). Measuring metacognitive judgments. In D.J. Hacker, J. Dunlosky & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

Serra, M.J., & Metcalf, J. (2009). Effective implementation of metacognition. In D.J. Hacker, J. Dunlosky & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

Shaughnessy, M. (1977). *Errors and expectations: A guide for the teachers of basic writing*. New York: Oxford.

Sommers, J. (2006). Enlisting the writer's participation in the evaluation process." In R. Straub (Ed.), *Key works on teacher response: An anthology*. Portsmouth: Boynton/Cook. (Reprinted from *Journal of Teaching Writing,* 1989, pp. 95-103).

Sommers, N. (2011). Revision strategies of student writers and experienced adult writers. In V. Villanueva & K. Arola (Eds.), *Cross-talk in comp theory: A reader*, (3rd ed.), (pp. 43-53). Urbana, IL: NCTE. (Reprinted from College Composition and Communication, 1980, pp. 378-387).

Stiff, R. (2006). The effect upon student composition of particular correction techniques. In R. Straub, (Ed.), *Key works on teacher response: An anthology.* Portsmouth: Boynton/Cook. (Reprinted from *Research in the Teaching of English, 1*, 1984, pp. 54-75).

Tarricone, P. (2011). *The taxonomy of metacognition*. New York: Psychology Press.

Tobias, S., & Everson, H. (2009). The importance of knowing what you know: A knowledge monitoring framework for studying metacognition in education. In D.J. Hacker, J. Dunlosky , & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

Vygotsky, L. (2012). *Thought and language*. Cambridge: MIT Press.

Waters, H.S., & Schneider, W., (Eds.). (2010). *Metacognition, strategy use, and*

instruction. New York: The Guilford Press.

White, E. (2007). *Assigning, responding, evaluating: A writing teacher's guide*. Boston: Bedford/St. Martin's.

Williams, J.P., & Atkins, J.G. (2009). The role of metacognition in teaching reading comprehension to primary students. In D.J. Hacker, J. Dunlosky, & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

Yancey, K.B. (1998). *Reflection in the writing classroom*. Logan: Utah State University Press. http://wpacouncil.org/positions/outcomes.html

Appendices

Appendix A: Rhetorical story assignment

Description:

The rhetorical story is a short, low-stakes reflective writing assignment in which you think about the essay you just completed and are about to turn in – this means that it while it should be readable, it does not need to be perfectly organized and edited. Your rhetorical story won't receive a grade, but you need to write it in order for me to comment on your formal essay (it is my window into your essay!).

Do your best to give the same amount of attention to all three prompts below, but if you feel like you can't answer one prompt at all, don't worry. Just tell me that you aren't sure what to say. As always, let me know if you have any questions.

Length: 1-2 pages, double-spaced

Prompts

- **Describe yourself as a writer involved in this writing task.** What was your motivation in choosing this topic? What was your stance? What strengths did you bring to the writing situation? What were your challenges?
- **Describe this writing task.** What was being asked of you by this assignment? What was your purpose in composing? Who was your audience and what was their interest in the situation?
- **Describe the strategies you used to accomplish this writing task.** Please describe one or two specific moves you made with your thinking, research, or writing. For each move consider: What decision did you make? What were your alternatives? What effects do you think your decision had on the finished essay?

Appendix B: College Writing I, portfolio introduction assignment

Description

This, your final paper major paper, is an introduction to your portfolio. This essay has three major purposes:

1) to demonstrate your understanding of the major concepts we covered this semester
2) to explain the selections you made for your portfolio
3) to demonstrate your awareness of the rhetorical situation and your own writing choices

The subject of this essay is your experience in WRIT 101. But it is more than a simple walk through of the course through your eyes; *it - combined with your portfolio - is an argument for what you learned this semester.* The contents of this introduction function as a thesis statement, while your portfolio functions as the evidence of that assertion. Please come to this assignment with seriousness and focus, and be ready to provide concrete assertions and evidence as you would with any other argument. More than anything else, I am looking for evidence that you are aware of yourself and your actions as a writer.

Your paper should not be an evaluation of the class (you will have another chance to offer an official evaluation of the course, the texts, and me).

In this essay I am specifically looking for you to review and evaluate your own growth as a thinker, writer, and researcher. Comments such as "I really learned a lot" or "I grew a lot as a writer" will only work if they are followed by specific evidence. In general (and as with all of your writing) you should aim for eliminating vague language.

General Invention Prompts

1. Explain choices you've made, from revision to particular works, to grounds for inclusion, to organization.
2. Discuss each major piece of writing you've included, mentioning the strengths of each.
3. Outline the process of composing or revising one or more entries.
4. Examine your struggles as a rhetorician and writer and reader and show how you've worked to overcome them.
5. Discuss the role collaboration played in your composing process.
6. Reflect on what you've learned about course concepts.
7. Discuss the rhetorical knowledge you've learned in the class and point to instances in portfolio entries where you're exploring/applying it and ways you can imagine using it in the future.
8. Discuss what you learned within the context of particular assignments and across assignments.

Appendix C: Teaching with the rhetorical story

What is the rhetorical story?

- The rhetorical story is a short piece of critical reflective writing designed to help students build problem-solving skills.
- The rhetorical story is a specific assignment that asks the students to reflect on the writing task, who they are as writers engaged in the task, and specific strategies they used to accomplish the writing task.

What do I do with a rhetorical story?

- The rhetorical story will help you understand how your students viewed their essays and will give you insight into what they were struggling with, hoping for, or worried about in writing.
- The rhetorical story is the place to begin your comments about a major essay. When you sit down to grade papers, you should:
    - Read the rhetorical story first.
    - Read the essay it accompanies.
    - Specifically intend to notice the moves the writer discusses in the rhetorical story.
    - Begin your feedback to the student by responding to the rhetorical story, specifically part three (about strategies) if possible.
    - If you have other major concerns about the student's work, choose one or two at the most to communicate to them. If you can link them to the rhetorical story, that's even better.
    - Make margin comments as you normally would.

How should I assign the rhetorical story?

- The rhetorical story assignment should be included on each major inquiry assignment (the PAE, the Op-Ed, and the Lifeplace).
- The rhetorical story is due at the same time as the major inquiry assignment.

How should I explain what it is?

- Although there are quite a few ways you could explain it, you might like the metaphor of the rhetorical story as a window into student thinking. One researcher likened reading student work alone as hearing one side of a conversation; when we only hear one side of a conversation (for example, when walking past someone chatting on a park bench) we have to guess at what the other person said. The rhetorical story is like hearing both sides of the conversation.
- You might also tell students that the rhetorical story makes it possible for you to give them useful comments and revision ideas. If you know what their hopes are for an essay, you can more easily help them get there.

What if a student doesn't write one?

- If a student turns in an essay without a rhetorical story, send them an email and remind them that you won't read their essay without it. Remind them that you can help them if they need it. You might say something like, "I could make about 100

different comments on your paper, but I don't know which comments will be useful to you without the rhetorical story."

What if a student writes one, but it isn't very good?

- Well, yes, this happens. If a student turns in a rhetorical story that is very vague, off-topic, or seems to say things that are irrelevant, you should still respond to it. The goal of the first rhetorical story, especially, is to let them know that you read it and will comment based upon it.
- Respond to it in some way, but then you can offer them suggestions, too, for how you might have answered those questions about their paper.

Appendix D: Reflective end-of-semester prompts for students

Directions for Teachers: At the end of the semester, please write these prompts on the board and ask students to answer them in fastwrite-fashion.

1. Reflective work is work that offers a student a chance to pause and consider something s/he is working on or has just completed. What kinds of reflective work did you do this semester?
2. Do you think the reflective work was important to your learning? Why or why not?
3. Do you have any other questions or comments about your reflective work?

Appendix E: Reflective prompts for teachers

Beginning of the semester: Based on your experience as a teacher, what role do you think reflection plays in learning?

Middle of the semester: What does reflective writing look like in your class this semester? How are the students responding to it? How are you engaging with it as a teacher?

End of the semester: What kinds of reflective work did your students complete this semester? What role do you think the reflective work had in your students' learning this semester?

Appendix F: Index for Metacognitive Knowledge in Critical Reflective Writing

Index for Metacognitive Knowledge in Critical Reflective Writing *Amy Ratto Parks, January, '15*

Declarative Knowledge: Knowledge of oneself and one's abilities (strengths and weaknesses). Also includes task knowledge; knowledge, skills and strategies for completing the task. In reflective writing, statements that convey declarative metacognitive knowledge are focused on the relationship between *self* and *task*.	**D1:** Assess general personal strengths and challenges or recounts personal history, experiences, and preferences.	**D2:** Simplistically recounts or explains what happened (or didn't happen) or what was completed (or not completed).	**D3:** Demonstrates *task* awareness by naming a discreet task and beginning to explain his/her strategies for completion (but does not name strategy).	
• "This is what happened." • Discreet, zoomed-in focus				
Procedural Knowledge: Knowledge needed to carry out procedures in order to apply declarative knowledge; tells the learner how to complete a task. In reflective writing, statements that convey procedural metacognitive knowledge are focused on the relationship between *task* and *strategy*.	**P1:** Names a strategy or behavior the student did or did not engage in a single assignment.	**P2:** Explains why a particular strategy was engaged in a single assignment.	**P3:** Describes more than one strategy or writing behavior in a single assignment.	**P4:** Shows that the student observes connection between strategies and tasks in a single assignment.
• "This is what I did and how I did it." • Shows connection between task and strategy; wider-lens focus				
Conditional Knowledge: Knowing when, where, and why to use declarative and procedural knowledge. In reflective writing, statements that convey conditional metacognitive knowledge are focused on the relationship between *person*, *task* and *strategy*.	**C1:** Observes behaviors across writing assignments or throughout course.	**C2:** Explains when, where, or why a certain writing strategy was or would be of use across assignments or throughout course.	**C3:** Demonstrates an understanding of the class as a collection of interrelated writing tasks; may state or imply future use.	**C4:** Demonstrates beginning theories about writing, rhetoric, learning, school, or their own academic practices, processes, or behaviors.
• "This is why I did what I did." • Big-picture, conceptual understanding.				
Transitional/Miscellaneous (T/M)	A quote from a peer or another source included without context or analysis.	Comments directed to the teacher ("you").		
Fragmented (F)	Fragmentary interjection such as "So fun!" or "Whew!".	Sentence fragment or impartial thought that does not offer enough information for analyzing metacognitive knowledge.		

Appendix G: Inter-rater reliability study materials

Slides from coder training.

CODING WITH THE IMK-ICR: TRAINING GUIDE

Training for scorers

Overview

- Brief conceptual background.
  - Metacognition and its relationship to problem-solving, reflection, and writing.
- The coding index.
  - Meet the IMK-ICR
- Our goals for today.
  - Learn, practice, code.

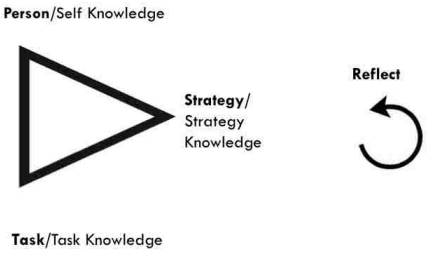
What is Metacognition?

- Cognition vs. Metacognition
- "One's ability to monitor, evaluate, and make plans for one's learning" (Tobias & Everson, 2009).
- Connected to self-control, intrinsic motivation, executive function, self-concept, self-regulated learning, personal agency (Hacker et al., 2009).

Why Teach Metacognitive Skills?

- Connected to self-control, intrinsic motivation, executive function, self-concept, self-regulated learning, personal agency (Hacker et al., 2009).
- A sense of personal agency is intimately connected with self-knowledge, awareness, and control of cognition (Negretti, 2012).
- NCTE, The Common Core State Standards Initiative, and Council of Writing Program Administrators include metacognitive development in their outcomes statements.

Reflection & Problem Solving



Reflection vs. Critical Reflection

- Reflection: "The process by which we know what we have accomplished and by which we articulate accomplishment" (Yancey, 1998, p. 6).

- "Critical reflection is an inductive process based upon presuppositions, beliefs and experiences, involving critical assessment, knowledge and assumptions which form the basis of these beliefs" (Tarricone, 2011, p. 28).

Assessing Critical Reflection

- Although reflection is commonly used to assess students, and although teachers and students benefit from it, we aren't sure how to assess it (Yancey, 1998).

Meet the IMK-ICR!

- IMK-CRW is short for Index of Metacognitive Knowledge In Critical Reflective Writing.
  - Based closely on Pina Tarricone's Taxonomy of Metacogntion (2011).
  - Helps scorers determine the kind of metacognitive knowledge at work in each student sentence.
  - Three major categories: declarative, procedural, conditional.

Declarative Knowledge

- Knowledge of oneself and one's abilities (strengths and weaknesses). Includes task knowledge; knowledge, skills and strategies for completing the task. In reflective writing, statements that convey declarative metacognitive knowledge are focused on the relationship between *self* and *task*.

Declarative Examples

- "I was very overwhelmed by that paper."
- "I did not understand what rhetoric was before this class."
- "The first assignment we did was the blind draft."
- "I spent more time on my second paper."

Procedural Knowledge

- Knowledge needed to carry out procedures in order to apply declarative knowledge; tells the learner how to complete a task. In reflective writing, statements that convey procedural metacognitive knowledge are focused on the relationship between *task* and *strategy*.

Procedural Examples

- "The arrangement could still use a little revision."
- "It outlined how to set up my subject, how to identify my audience and different techniques to steer my paper."
- "I tried to be really organized."
- "I chose to write about snakes."

Conditional Knowledge

- Knowing when, where, and why to use declarative and procedural knowledge. In reflective writing, statements that convey conditional metacognitive knowledge are focused on the relationship between *person*, *task* and *strategy*.

Conditional Examples

- "I had a terrible problem with procrastination all semester."
- "I learned just how much gearing a work toward a particular group changes the rest of the evidence used in writing."
- "One of the biggest obstacles I found was simply choosing an audience, as this choice determines the voice and content of a work."
- "Rhetorical knowledge helps you be persuasive."

Now… on to the IMK

References

Flavell, J.H. (1976). Metacognitive aspects of problem solving. In L. Resnick (Ed.), *The nature of intelligence*. New York: Lawrence Erlbaum Associates.

Hacker, D.J., Dulosky, J., & Graesser, A.C. (Eds.). (2009). *Handbook of metacognition in education*. New York: Taylor and Francis.

Negretti, R. (2012). Metacognition in student academic writing: A longitudinal study of metacognitive awareness and its relation to task perception, self-regulation, and evaluation of performance. *Written Communication*, 29(2), 142–179.

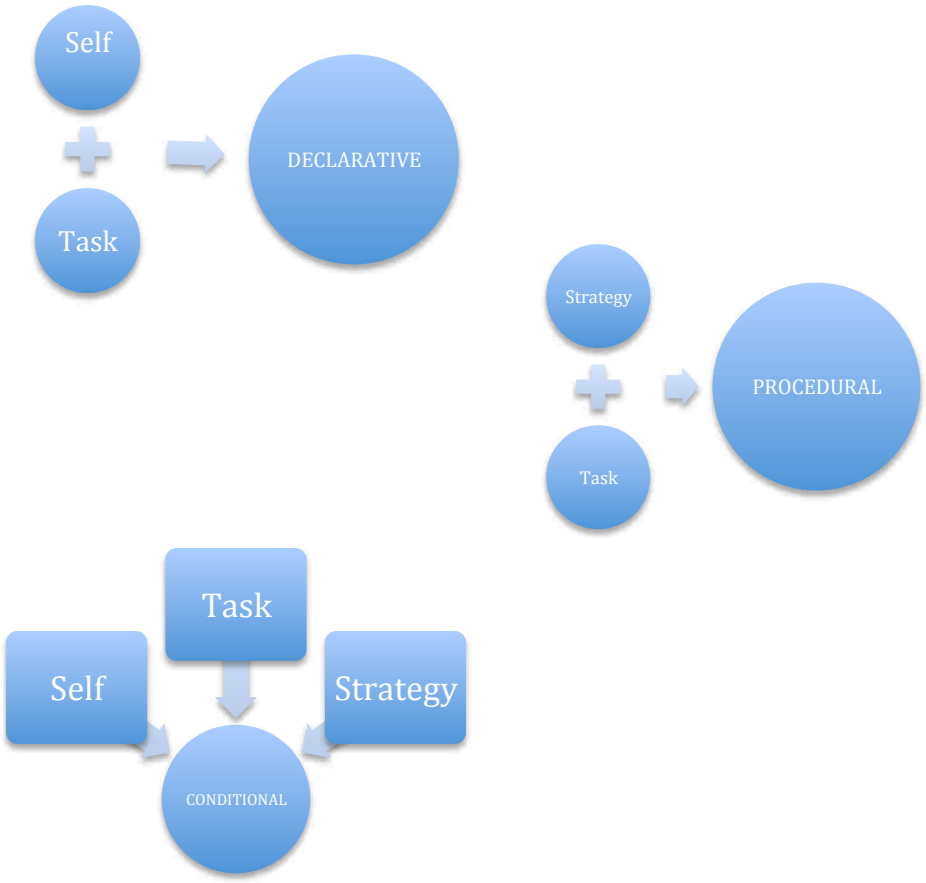
Tarricone, P. (2011). *The taxonomy of metacognition*. New York: Psychology Press.

Tobias, S., & Everson, H. (2009). The importance of knowing what you know: A knowledge monitoring framework for studying metacognition in education. In D.J. Hacker, J. Dulosky , & A.C. Graesser (Eds.), *Handbook of metacognition in education*. New York: Taylor and Francis.

Yancey, K.B. (1998). *Reflection in the writing classroom*. Logan: Utah State University Press.

Appendix H: Inter-rater Reliability Study Materials

Scorer training guides



Quick Scoring Guide

Is this talking about the student's history, personal experiences, strengths/weaknesses, or preferences? → **D**

Is this talking about a strategy the student used toward some purpose? (For example, organization, choosing a topic, researching, editing, etc.)

- Is it talking about a strategy used in ONE paper? → **P**
- Is it talking about a strategy used in MORE THAN ONE paper, or throughout the course? → **C**

Is the student make big-picture observations, waxing philosophical, or telling you what s/he learned throughout the class? → **C**

Is the student quoting someone else or directly addressing the teacher? → **T/M**

Is the sentence incomplete or you can't understand what it means? → **F**

Other things to consider

→ The "task" or assignment can be an individual paper or the *portfolio itself*.

- For example: "I included my PAE first."

→ There are no rules about how many codes need to follow each other or whether D "ought" to be followed by P. All three kinds of sentences are present in the strongest writing, but they can appear in any mix of arrangements.

→ If a sentence seems to have traits from more than one category, remember that it's like rock paper scissors:

- P trumps D
- C trumps P & D
- D trumps nothing!

- For example: "I definitely have grown as a writer and made steps towards being able to write longer essays with ease, something that has always posed an issue for me."
    - This is talking about a strength or weakness, which would signal a "D", but it is really a sentence about a global observation about the semester so it is a "C."

→ Sometimes sentences that we might normally consider vague are showing us important metacognitive connections.

- For example: "Throughout the course I have learned multiple techniques to help me become a more effective writer." This sentence is showing that the student is making an observation about his/her experiences on the whole.

Appendix I: Inter-rater Reliability Study Materials

Scorer Training Guides: Declarative knowledge anchor sentences.

D1:

1. "The Opinion Editorial was slightly easier for me to write."
2. "I have never liked writing very much."
3. "In high school I always got easy A's."

D2:

1. "Our first paper was the Personal Academic Essay, where we were supposed to relate our personal experiences to a deep, controversial subject without a clear solution or answer."
2. "The op-ed came next."
3. "Once we were finished with the first draft of it, we were to simply clean it up and make it look presentable."

D3:

1. "I would have liked to work on everything a little more but I feel my overall portfolio is pretty decent, at least relatively to what my writing was like at the start of the semester."
2. "The paper turned out as a jumbled back and forth between my aunt's death and the traumatic events that took place surrounding boarding schools."
3. "My portfolio contains the English work and writing I compiled over the course of this fall semester of 2014, which represents my own thoughts that took many revisions to become solid and clear."

Appendix J: Inter-rater Reliability Study Materials

Scorer Training Guides: Procedural knowledge anchor sentences.

P1:

1. "I chose to write about the reinstatement of North American Bison as a free-ranging animal."
2. "The strong part of the paper though I would say was getting my belief across to the reader."
3. "The biggest change I made was taking out a majority of the quotes I had included."

P2:

1. "And because it was such a fun little fast write, I decided to include it in my portfolio."
2. "I included the rough drafts and previous final copies to exemplify my transformation into a better writer."
3. "I include the rough draft so that you could see where the writing started."

P3:

1. "Now, I have written a new PAE, with a new topic, I have included sources, quotes, and did significantly more research than I did the first time around."
2. "I made sure to make it more organized and I included citations for my image."
3. "This was a hard paper but I tried to show my personal connection and the interesting information."

P4:

1. "I think one of the biggest strengths of the PAE is that it has a multitude of facts and information that 100% transparent and easily accessible, giving it validity as a research paper without sounding overly monotonous."
2. "I very much enjoy putting my own thoughts and opinions into my writing and feel gratified after re-reading my op-ed drafts and hearing a strong voice that appeals to the audience and makes sense."
3. "With an understanding of many aspects of the problem of brucellosis, I was able to choose the most relevant and interesting subtopics for my paper."

Appendix K: Inter-rater Reliability Study Materials

Scorer Training Guides: Conditional knowledge anchor sentences.

C1:

1. "I really struggled with my introductions all semester – even this one."
2. "I had such a hard time using rhetoric and persuasion in my papers because I would always focus on such a broad topic rather than narrowing it down which made the paper less persuasive and more confusing."
3. "It really helped make workshop go well when I had my own questions prepared for my partner."

C2:

1. "Learning to write what is currently on my mind has allowed me to learn how to start a paper they I was previously lost on."
2. "Using good punctuation and grammar makes it easier for your reader to understand."
3. "One example of this is my usage of intonation to help carry a more professional tone."

C3:

1. "Over the course of this semester we have studied and read many short stories trying to grasp the meaning of rhetoric in different types of essays."
2. "Whether we were writing a personal academic essay, op-ed, or life-place essay the main occurrence through all three was rhetoric."
3. "I was really interested in learning about fallacies, argumentative, and research writing, I think the research paper practice will really help me in the future with my chemistry degree."

C4:

1. "Having that type of learning environment is very reassuring and helps not only myself but other students thrive."
2. "Understanding rhetoric and writing well are the key to succeeding in college."
3. "I used to think that last minute writing was OK, but now I can see that good writing take time and revision."

Appendix L: Inter-rater Reliability Study Materials

Scorer Training Guides: Transitional/fragmented anchor sentences.

Transitional/Miscellaneous:

1. “I've failed over and over and again in my life and that is why I succeed."
2. “I hope you notice that I have improved this semester.”
3. “Brace yourself, as you are about to submerge into an entire semester of writing.”

Fragmented:

1. “I couldn't of said it better myself.”
2. “Now let's dive into the work.”
3. “And with that lets begin....”

Appendix M: University of Montana University-wide Program-level Writing Assessment Holistic Rubric

(Created by the ASCRC Writing Committee, Revised May 13, 2013)

Score 4: Advanced

- The texts show a strong sense of purpose and audience.
- Expression of ideas is articulate, developed, and well-organized.
- These texts demonstrate a clear ability to synthesize concepts.
- The texts consistently show the writer's ability to evaluate and use information effectively.
- Writing style (word choice and sentence fluency) is highly effective for the purpose and audience.
- The writer is beginning to use discipline-specific writing conventions with general success.
- While there may be a few errors in grammar, usage, and mechanics, a strong command of English language usage is clearly evident.

Score 3: Proficient

- The texts show a clear sense of purpose and audience. Expression of ideas is generally developed and organized.
- These texts demonstrate an ability to synthesize concepts.
- The texts show the writer's ability to evaluate and use information.
- Writing style (word choice and sentence fluency) is effective for the purpose and audience.
- The writer is beginning to use discipline-specific writing conventions with uneven success.
- While there may be some errors in grammar, usage, and mechanics, a competency in English language usage is evident.

Score 2: Nearing Proficiency

- The texts show some attention to purpose and audience. Expression of ideas may be vague, unclear, and/or unorganized at times.
- These texts demonstrate developing ability to synthesize concepts.
- The texts reveal the writer's uneven ability to use information; use of information may be insufficient.
- Writing style (word choice and sentence fluency) is sometimes ineffective for the purpose and audience.
- The writer shows minimal knowledge of discipline-specific writing conventions.
- A basic control of English language usage is apparent, even though frequent errors in grammar, usage, or mechanics may occasionally hinder understanding.

Score 1: Novice

- The texts show little understanding of purpose and/or audience.
- Expression of ideas is confusing, minimal, or irrelevant; the organization is illogical or weak.
- These texts demonstrate difficulty in synthesizing concepts.
- The writer's use of information is inaccurate, inappropriate, or missing.
- Writing style (word choice and sentence fluency) is not effective for the purpose and audience.
- The writer shows little to no awareness of discipline-specific writing conventions.
- Severe problems with grammar, usage, and mechanics show poor control of English language and impede understanding.