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THE EFFECTS OF USING A CRITICAL THINKING GRAPHIC ORGANIZER TO IMPROVE CONNECTICUT ACADEMIC PERFORMANCE TEST INTERDISCIPLINARY WRITING ASSESSMENT SCORES

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WRITING ASSESSMENT SCORES

by

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THE EFFECTS OF USING A CRITICAL THINKING GRAPHIC ORGANIZER TO

IMPROVE CONNECTICUT ACADEMIC PERFORMANCE TEST (CAPT)

INTERDISCIPLINARY WRITING ASSESSMENT SCORES

Patrick D. Higgins

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Abstract

Effective communication skills are a vital component of student academic achievement and success, yet students often struggle with them. This study utilized an organizational writing graphic organizer based on a critical thinking model to determine the impact of its use on the persuasive writing scores of 9th-grade students.

A sample of convenience, 119 ninth grade students across three academic levels (Academic, College Preparatory, and Honors) attending a suburban high school in the Northeast was utilized. Students in the treatment condition utilized a critical thinking graphic organizer to write persuasive essays over a 12-week period, and students in the comparison condition wrote persuasive essays during the same time period using a traditional graphic organizer, with less of a focus on critical thinking, provided by the state. A quasi-experimental pretest posttest design was utilized to analyze quantitative data collected through practice assessments. Focus groups

were conducted using teachers and also students from the treatment group whose scores had improved.

Data were analyzed using a Mann-Whitney analysis to determine if there was a significant difference in the mean practice CAPT Writing Across the Disciplines persuasive essay scores between students who used the critical thinking graphic organizer (treatment group) and students who used the traditional state organizer (comparison group). Qualitative coding methods were used to analyze focus group responses for themes and patterns associated with student and teacher perceptions through their exposure and work with the critical thinking graphic organizer. The results revealed that there was no significant difference in persuasive writing scores between the treatment and comparison groups. However, a qualitative analysis of teacher and student perceptions revealed that participants were favorable towards the use of the critical thinking graphic organizer.

APPROVAL PAGE

School of Professional Studies
Department of Education and Educational Psychology
Doctor of Education in Instructional Leadership

Doctor of Education Dissertation

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IMPROVE CONNECTICUT ACADEMIC PERFORMANCE TEST (CAPT)

INTERDISCIPLINARY WRITING ASSESSMENT SCORES

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There's no thrill in easy sailing when the skies are clear and blue; there's no joy in merely doing things which anyone can do.   But there is some satisfaction that is mighty sweet to take, when you reach a destination that you thought you'd never make.

<div align="right">Anonymous</div>

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DEDICATION

This dissertation is dedicated to my wife Tammy, and my children Patrick and Katlyn. Thank you for your unwavering support, love and understanding throughout the many months it took to write my dissertation. You were always there to pick me up when I was down, or to show me a new thing or two with Microsoft Word or other computer applications I was not quite sure of. I could not have done this without you. I love you all!

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CHAPTER ONE: INTRODUCTION TO THE STUDY

Secondary-school students (9-12) who struggle with writing are less likely to achieve at the proficient (Level 3) or goal (Level 4) levels on the Writing and Reading for Information assessment of the Connecticut Academic Performance Test (CAPT) (Connecticut State Department of Education, 2010a). The CAPT is the standard assessment administered to students in Grade 10 that assesses students within the content areas of reading, mathematics, writing and science, and is designed to promote better instruction and curriculum by providing information on student, school, and district strengths and weaknesses (Connecticut State Department of Education, 2012). Students who fail to pass the CAPT examination are mandated by the Connecticut State Department of Education (CSDE) to receive district remediation services and will not earn a CAPT endorsement from this agency on their high school transcripts (C. Albarino, personal communication, October 15, 2010). Therefore, research on how to improve students' writing is critical to students who hope to apply to college, especially, those who find themselves struggling during the CAPT preparatory writing process.

Background of the Study

The purpose of this study was to determine whether the use of a critical thinking graphic organizer would improve student scores on the Interdisciplinary Writing assessment of the CAPT. Currently, this portion of the CAPT is a persuasive essay that requires students to take a position regarding a controversial topic, writing a thesis statement and providing support for their ideas. Students sometimes struggle with this portion, demonstrated by the fact that 13.8% of students taking the CAPT in 2010 did not reach proficiency (Level 3) on the Interdisciplinary Writing Assessment (Connecticut State Department of Education, 2010a). Much of the research on graphic organizers to date has focused on enabling students to write in an expository manner (e. g., Horton, Lovitt & Bergerud, 1990; Moore & Readence, 1984). The purpose of this study

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was to better understand how teachers may use graphic organizers to scaffold students to write persuasively.

Statement of the Problem

The CAPT has been administered since 1995 to high school sophomores. In 2010, 42,573 students in grade 10 took the CAPT Writing Across the Disciplines Assessment. In writing, 26.8% of students scored at an advanced level (Level 5), 32.8% scored at a goal level (Level 4) and 26.6% score at a proficient level (Level 3). The remaining 13.8 % of Connecticut high school sophomores in 2010 – 5,875 students – did not achieve goal (CSDE, 2010a). The Connecticut State Department of Education's website (CSDE, 2010b) does not reveal the existence of a uniform plan or program to address the needs of learners while preparing for the Interdisciplinary Writing and Reading for Information assessment.

The need for students to write persuasively is recognized by the National Assessment of Educational Progress (NAEP). The NAEP's 2007 Writing Report Card indicates that 40% of 12th –grade students scored below a sufficient level on a persuasive writing task (National Center for Education Statistics, 2007). According to the NAEP Writing Item Map scale scores, students write essays in which they take a position, but in an effort to develop and support their positions, their writing possesses one or several of the following flaws: lack of development, repetition of ideas, breakdowns in organization, and disorganized or unfocused development (NCES, 2007).

An investigation of a practical tool that teachers may use to enable students to write persuasively is timely for several reasons. First, secondary schools and educators are tasked to create interventions to prepare learners to take the CAPT, yet few state-provided resources are offered to prepare them to do so. Consequently, educators frequently work in a vacuum, creating

their own interventions, which may or may not be effective. Second, in a time of limited budgets, school districts struggle to provide adequate staffing and financial resources for students. This research attempted to provide educators with a research-based tool to prepare students to take the CAPT assessment.

Potential Benefits of the Research

This research is important for several reasons. Currently, state-provided instructional materials and programs that are designed for student remediation or performance enhancement on the CAPT Interdisciplinary Writing assessment are lacking. To assist sophomores who participate in the statewide assessments and subsequently fail to reach goal (Level 4), educators are required to provide their own instructional tools. Many of these tools lack empirical research. Students may also choose to purchase self-help-style manuals (Shirley, Mullan, Fucci, Lawlor & Mirabello, 2009) from a limited selection of publications specifically focused upon this aspect of the CAPT. Therefore, educators and students are using a blend of remedial and enhancement tools resulting from uncontrolled variables such as school district resources, classroom size, instructor experience, and the demands of curriculum benchmarks.

Educators may use graphic organizers that strengthen students' written arguments through the use of critical thinking, a process that can yield positive results and be beneficial to the learner in a variety of ways. Before students begin writing their persuasive essays, the graphic organizer permits learners to solidify their ideas while simultaneously examining alternative viewpoints (Felton & Herko, 2006). Written exercises such as the CAPT Interdisciplinary Writing assessment are subject to uniform timed testing constraints, which may prove stressful for learners who are attempting to organize and compose a persuasive argument. Paul's Elements of Thought (Paul, 1992) graphic organizer may be helpful to assist students in

the expeditious use of their time in the persuasive writing process. Also, current organizers for the CAPT assessment require a minimum amount of critical thinking in that students only list pros and cons of one side of an issue. The Paul's Elements of Reasoning Modified Writing Graphic Organizer utilized in the treatment condition of this study may be used to allow students to develop their ideas more fully, requiring that they think about both sides of an issue before writing.

Definition of Key Terms

The following terms are relevant to this dissertation:

1. **Connecticut Academic Performance Test (CAPT)** is mandated by Connecticut General Statute (Section 10-14n), which requires that all public school students enrolled in grade 10 participate in the assessment. In 1995, the Connecticut Academic Performance Test (CAPT) was instituted for all of Connecticut's tenth grade students as the logical extension of the Connecticut Mastery Test (CMT) at the high school level. Administered from the spring of 2007 to the present (2012), the third generation of the CAPT (assesses and reports) on student performance in four areas: mathematics, language arts (Reading for Information and Response to Literature), writing, (Interdisciplinary Writing and Editing and Revising) and Science (Connecticut State Department of Education, 2010b).

2. **Critical thinking** is defined as the art of analyzing and evaluating thinking with a view to improving it. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking which requires rigorous standards of excellence and mindful command of their use, in addition to effective

communication and problem solving abilities combined with a commitment to transcend native egocentrism and socio-centrism (Paul & Elder, 2008).

3. **Elements of Reasoning Web** is defined as a model of critical thinking that places emphasis upon eight key elements: issue, purpose, point of view, assumptions, concepts, evidence, inferences, and implications or consequences. Teachers introduce these terms to their students first. Using a familiar school or community issue, teachers encourage the use of the terms and the model in approaching problems and issues (Elder & Paul, 2007).

4. **Persuasive writing** is defined as a consistent task that requires the use of complex language to analyze, discuss, and resolve controversies in a way that is clear, convincing, and considerate of diverse points of view (Nippold, Ward-Lonergan, & Fanning, 2005).

Research Questions and Hypotheses

This study utilized a quasi-experimental, mixed methods pre-posttest research design to investigate the impact of a critical thinking graphic organizer based on Paul's Elements of Reasoning on student scores of the Interdisciplinary Writing Assessment of the CAPT: taking a position, support, comprehension, organization, and clarity/ fluency. The researcher investigated the following questions:

1. Is there a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th grade students who participate for 12 weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and those who do not?

Non-Directional Hypothesis: There will be a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th grade students who participated for 12 weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and those who did not.

2. How do 9th-grade students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing pretest, but who did meet goal on the posttest, view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

3. How do teachers in the treatment condition view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

Methodology

Description of the Setting and the Subjects

The 119 ninth grade participants in this study were a sample of convenience attending a suburban public high school in the northeast. Approximately 987 students attend the high school, which is located in a community of over 18,015 residents (ZIP Skinny, 2012). Three students at the high school identified themselves as Native American, 60 as Asian-American, 25 as African-American, 97 as Hispanic/Latino and 802 as White. In 2010, 106 students were eligible to receive a free/reduced price meal (Connecticut State Department of Education, 2010b). In addition, three World History I teachers participated in this study; they hold certifications from the Connecticut State Department of Education and were randomly assigned to either a treatment or comparison condition.

Instrumentation

Data were collected using five instruments.

CAPT grading rubric (researcher-modified). The CAPT is formally scored through the derivation of scaled scores from raw scores. However, when practice assessments are performed, the raters often use holistic scoring, deriving one overall score for the essay. In this study, quantitative scores were assigned for each of the following subcomponents: taking a position, support, comprehension, organization, and clarity/fluency (Appendix A). In addition, a bonus point was added for a near-perfect paper, a process that is discussed in more depth in chapter three.

The standardized CAPT prompt included a reading and response booklet. After reading two published (700 - 1,000 word) nonfiction articles, students were allotted 65 minutes to write their persuasive essays, which identified and took a position supported by evidence on a topic.

Validity and reliability are reported with the CAPT assessment and grading rubric. For validity, a study of the strands proposed for the second generation CAPT was conducted by the CSDE, which sought the input of approximately 4,000 Connecticut educators, parents, and additional citizens. The purposes of the study were twofold: (a) to determine the appropriateness of the skills included on the Writing across the Disciplines strand; and (b) to determine whether the content and skills required in the strand were being taught prior to the conclusion of the 10th grade. Respondents to the survey reported that the skills required by the writing strand were significant educational outcomes in which students should receive instruction before testing (Hendrawan & Wibowo, 2011), and skills and content were being taught. Reliability for the grading rubric for the CAPT assessment was found to be adequate; Cronbach's Alpha was .802.

Student focus group interview protocol. Contained in Appendix B, this researcher-designed qualitative interview protocol for students was utilized with students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing practice pretest, but who did meet goal on the posttest. The purpose of the focus group was to determine how these students viewed their experiences using the modified graphic organizer and whether they believe it helped them to improve.

Teacher focus group interview protocol. A researcher-designed qualitative interview protocol for treatment group teachers is located in Appendix C. The purpose of the focus group was to determine how the teachers viewed their experience of using the modified graphic organizer and whether they believe it helped students to improve their persuasive writing capabilities.

Demographic forms. Teacher (Appendix D) and student (Appendix E) demographic forms were used to identify key characteristics of the sample.

Teacher logs. Teachers in both the treatment and comparison conditions were encouraged to use their graphic organizers at least once a week, and maintained a log (Appendix F) documenting the number of times they used the method.

Description of the Research Design

The research utilized a quasi-experimental, mixed-methods pre-posttest design with randomly assigned intact groups. Through the utilization of quasi-experimental design, the random assignment of subjects to experimental and comparison groups can strengthen the internal validity of an experiment (Gall, Gall & Borg, 2007). However, random individual student assignment was not possible due to the fact that the researcher worked with previously scheduled intact classes. Prior to the 12-week treatment period, 10 classrooms from three

classroom teachers were randomly assigned to either a treatment or a comparison condition.

Teachers in the comparison condition used a standard graphic organizer provided by the state (Appendix G), which did not contain an emphasis on critical thinking.

Teachers in the treatment group were provided with a 4-hour workshop on the use of a graphic organizer (Appendix H) that incorporated the critical thinking components of Paul and Elder's (Paul & Elder, 2008) Elements of Reasoning Web (Appendix I) to improve student persuasive writing skills. The initial training workshop on the use of a Paul's Modified Writing Graphic Organizer was also held the same month.

At the beginning of the semester, students in both treatment and comparison classes were pretested using a standard practice CAPT pretest prompt provided by the state. Students in the treatment group received consistent persuasive writing instruction using the Paul's Modified Writing Graphic Organizer, while students in the comparison group received consistent persuasive writing instruction using the state-provided graphic organizer. Teachers in both the treatment and comparison conditions were encouraged to use their graphic organizers at least once a week, and they kept a log (Appendix F) documenting the number of times that they used the method.

All students were posttested at the end of 12 weeks using a standard practice CAPT posttest. A random sample of 50 pretests and posttests were scored by a second scorer and inter-rater reliabilities were calculated, discussed in more depth in chapter four.

Description and Justification of the Analyses

Research question one. The independent variable for the research question was the type of writing instruction the students received, and the two levels of the independent variable were: (a) the instruction using the critical thinking graphic organizer (treatment group), and (b)

the traditional instruction using materials provided by the Connecticut State Department of Education (comparison group).

The dependent variable consisted of mean posttest scores on the Practice CAPT assessment. When data for the dependent variable are not normally distributed, a Mann-Whitney U test is recommended to evaluate whether group means differ; a Mann-Whitney U test was therefore used to measure whether posttest scores differed significantly across the treatment and comparison groups (Green & Salkind, 2008).

Research question two. The design of this question was general qualitative. Seven students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing practice pretest but met goal on the posttest were randomly selected and invited to a focus group interview. The researcher used a protocol (Appendix B) to question these students about their perceptions regarding working with Paul's Elements of Reasoning Modified Writing Graphic Organizer. Their responses were audio recorded, transcribed and codified for qualitative analysis, using Saldana's (2009) Cycle coding method, in which the researcher explored the data, looking for patterns and themes.

Research question three. The researcher conducted a focus group using a researcher designed protocol (Appendix C) to treatment group teachers upon the conclusion of the research study to determine how teachers viewed their experience in working with the modified graphic organizer, and if they believed it helped their students to improve their persuasive writing capabilities. Their responses were coded for qualitative analysis.

Three levels of coding techniques were used to address research questions two and three – open coding, axial coding and selective coding. The data were coded by two researchers for the purposes of triangulation and to ensure trustworthiness. To verify core categories, an

interpretive analysis technique was used (Gall et al, 2007) to identify general themes within the data.

Data Collection Procedures and Timeline

The following procedures were followed according to the timeline.

1. Approval from the superintendent of schools (Appendix J) and the building principal (Appendix K) was granted to conduct experimental educational research in selected high school in the district. (Summer 2011)

2. Approval was granted by Western Connecticut State University's Institutional Review Board to conduct the study. (May 2011)

3. The researcher met with treatment and comparison teachers to introduce the study and teacher consent forms (Appendix L) were signed. (August 2011)

4. The researcher met with treatment and comparison group teachers to provide training in the use of the Paul and Elder's critical thinking writing organizer. (August, 2011)

5. Teachers' classes were randomly assigned to treatment or comparison groups. (September, 2011)

6. Parental/Guardian Consent (Appendix M) and Student Assent (Appendix N) forms for student research participants were distributed and collected. (September, 2011)

7. The practice Connecticut Academic Performance Test (CAPT) Writing Across The Disciplines pretest was administered to students in the treatment and comparison groups. (September, 2011)

8. Teachers within the treatment group trained in the implementation of the *Paul and Elder's Reasoning Web – Based Graphic Organizer* incorporated it as a part of their weekly regular persuasive writing exercises. (September – December 2011)

9. Teachers in the comparison group implemented the state CAPT writing organizer as a part of their weekly regular persuasive writing exercises. (September – December 2011)

10. Teachers' administration of treatment and comparison CAPT writing posttest assessment. (January 2012)

11. Researcher analysis of data and completion of writing. (January 2012 – June 2012)

12. The researcher met separately with teachers and students to conduct a focus group protocol. (March, 2012).

Chapter Summary

The CAPT Writing across the Disciplines assessment requires students to utilize their critical thinking skills by analyzing and synthesizing information for the purpose of writing a persuasive essay under timed conditions. The CSDE currently provides a writing graphic organizer for the CAPT assessment requiring little critical thinking in that students only list pros and cons of one side of an issue. It does not provide a graphic organizer for students preparing for an assessment that emphasizes critical thinking, yet students are graded accordingly by the use of a scoring rubric that emphasizes these important writing skills (CSDE, 2012).

Educators may use graphic organizers that strengthen students' written arguments through the use of critical thinking. Writing graphic organizers permit learners to solidify their ideas while simultaneously examining alternative viewpoints (Felton & Herko, 2006). The use of a Paul's Elements of Thought (Paul, 1992) graphic organizer may assist students in the expeditious use of their time in the persuasive writing process. This study utilized a quasi-experimental, mixed methods pre-posttest research design to investigate the impact of a critical thinking graphic organizer based on Paul's Elements of Reasoning on student scores of the

Interdisciplinary Writing Assessment of the CAPT: taking a position, support, comprehension,

organization, and clarity/ fluency in comparison to the traditional graphic organizer provided by

the Connecticut State Department of Education (comparison group).

CHAPTER TWO: REVIEW OF THE LITERATURE

This review of literature focuses on: (a) the importance of persuasive writing, (b) the literature linking persuasive writing and critical thinking, and (c) the link between graphic organizers and writing. The researcher accessed the EBSCO database for research seminal and other journal articles. Search term items related to this research were *persuasive writing*, *critical thinking*, and *graphic organizers and writing*. The research terms were mostly restricted from 1995 to 2012, with the exception of several seminal research articles dating back to 1960.

The Importance of Persuasive Writing

Persuasive writing is a demanding task for learners, especially within the constraints of a standardized timed testing environment. The task requires the learner to take a position on an issue while providing a logical argument for its defense through the use of supporting evidence. The learner's writing must contain evidence of critical thinking skills such as analysis and synthesis to posit effectively his or her point of view (Nippold, Ward-Lonergan & Fanning, 2005). A strong argument can be made for the relationship between persuasive writing and critical thinking skills. However, most state rubrics that judge student writing do not address critical thinking in writing (Hillocks, 2010), but instead address the issue of persuasive writing in vague discussions which lack emphasis on logical writing arguments. A review by the researcher of several state-generated writing test manuals revealed samples or models of student writing rated as persuasive, but these manuals do not provide the learner with instruction on the process of persuasive writing.

The National Governor's Association Center for Best Practices and the Council of Chief State School Officers recognized the importance of a student's ability to construct a written argument in a 2009 internet document entitled *College and Career Ready: Standards for Reading, Writing and Communication* which stated:

The ability to frame and defend an argument is particularly important to students' readiness for college and careers. The goal of making an argument is to convince an audience of the rightness of the claims being made using logical reasoning and relevant evidence. In some cases, a student will make an argument to gain access to college or to a job, laying out their qualifications or experience. In college, a student might defend an interpretation of a work of literature or of history and, in the workplace, an employee might write a recommended course of action. Students must frame the debate over a claim, presenting the evidence for the argument and acknowledging and addressing its limitations. This approach allows the readers to test the veracity of the claims being made and the reasoning being offered in their defense. (p. 2)

Persuasive writing is therefore the written form of oral argument or debate supported by evidence to reinforce the writer's point of view. Increasingly, students are required to demonstrate persuasive writing skills beyond traditional classroom assignments or graded assessments. Crowhurst (1990) suggested that persuasive or argumentative writing is important for several reasons, chiefly for success in academics and in one's general life. "The literate, educated person is expected to be able to articulate a position on important matters so as to persuade colleagues, fellow citizens, governments, and bureaucrats." (Crowhurst, 1990, p. 349). Thus, persuasive writing can be approached and taught as a life skill, not simply a rote exercise designed to prepare students to pass a state assessment test.

Further research reveals numerous deficiencies with regard to students' writing abilities beyond the secondary school classroom. Alter and Adkins (2001) cited concerns regarding the declining writing abilities of graduate social work students, namely their inability to explore issues with depth and complexity or to write with a command of diction, syntactic variety, and

transition; they also noted a lack of organization and coherence in students' writing. They

suggested that many students who graduate from college and progress to graduate school would

do so with inadequate writing skills.

In a recent survey (The Met Life Survey of The American Teacher, 2010), teachers,

students, parents and Fortune 1000 executives were asked to comment on student skill

preparedness for college and career readiness; results of the survey acknowledged the importance

of persuasive writing. Approximately 96% of teachers (*n* = 1,000) who were surveyed

responded that it was *absolutely essential/very important* for students to possess the ability to

write clearly and persuasively, with 90% of parents (*n* = 580), 88% of students (*n* = 2,002), and

97% of Fortune 1000 Executives (*n* = 301) responding similarly.

Within the workplace, poor persuasive writing skills may have detrimental effects upon

taxpayers. According to a recent governmental report (National Commission on Writing, 2005),

state governments spent nearly $250 million dollars per year on remedial writing instruction for

governmental employees, in some cases requiring workers to attend $400-per-employee writing

classes. In the same report, 100% of the 49 states responding to an anonymous survey generated

by the commission stated that writing was an important responsibility of those employed by state

government. In addition, 75% of respondents reported taking the writing skills of prospective

civil servants into account during the hiring process (Pope, 2005).

The Link Between Critical Thinking and Persuasive Writing

An effective case or argument presented and written in a logical manner is vital for

student achievement on the Interdisciplinary Writing assessment of the CAPT, demonstrated by

the fact that several of the key components assessed through Connecticut's CAPT Grading

Rubric are related to critical thinking (e.g., taking a position, providing support, and being

comprehensive in one's analysis) (Connecticut Academic Performance Test, 2010). The

remaining elements are related to the ability to organize one's ideas into a coherent whole and to

write effectively, as noted in the organization and clarity/fluency indicator (Connecticut

Academic Performance Test, 2010). Despite these facts, little support for critical thinking is

provided to students who are about to take the CAPT assessment. Although the Connecticut

Department of Education does provide a student writing organizer, the organizer does not engage

the student in-depth with critical thinking skills during the persuasive writing activity.

Crammond (1998) conducted research to investigate differences among student writers at

three grade levels (6, 8 and 10) and also between expert writers and students on the uses and

complexity of arguments presented in their persuasive texts. Participants in this study were

students from two elementary schools and one high school located in a suburban area near a

large city. Two classes of grade 6 students ($n = 56$), one class of grade 8 students ($n = 28$) and

one class of grade 10 students ($n = 27$) were asked to write a persuasive text in their English

classes. Twelve texts from each grade level were randomly selected for analysis. Published

expert writers ($n = 7$) who wrote argumentative and persuasive editorials, critical reviews, or

advertisements wrote and also judged the students' essays. Professional writing experience for

these journalists ranged from 3 to 18 years.

Crammond (1998) trained the expert writers to evaluate the essays based on a modified

version of Toulmin's (1958) model of argument that consisted of six elements: claims, data,

warrants, backing or support for the warrants, qualifiers, and reservations. Using the model,

researchers assigned persuasive texts into these categories and then quantitatively analyzed the

data counts using a chi-square. Results revealed that the frequency of warrants (the linkage

between data and a claim) used by students in grade 10 was similar to the use by students in

grades 6 and 8, suggesting that students do not improve substantively during middle and high

school in their ability to link data and claims. In comparison, writing produced by the expert

journalist group exhibited an extensive use of warrants requiring the use of critical thinking

synthesis and analysis skills vital to the formation of a persuasive argument. It is evident that a

link exists between critical thinking and persuasive writing. What, then, is critical thinking?

Critical Thinking

Educational researchers and writers have applied numerous interpretations and

definitions to critical thinking. American education researcher and author John Dewey

interpreted critical thinking as a reflective process, which required an individual to recognize its

causes and consequences (Dewey, 1903). Additional seminal contributive research and writing

on to critical thinking was developed by Edward Glaser (1941). In his work *An Experiment in*

the Development of Critical Thinking, Glaser (1941) suggested that critical thinking contains

three specific components:

(1) an attitude of being disposed to consider in a thoughtful way the problems and

subjects that come within range of one's experiences; (2) knowledge of the

methods of logical inquiry and reasoning; and (3) some skill in applying those

methods. (p.5)

The origins of modern critical thinking in education can also be attributed to Ennis

(1962), who observed that careful attention to the concept of critical thinking was lacking and

listed the following aspects (among others) to critical thinking: being open-minded to

alternatives; judging the credibility of sources; judging reasons, assumptions, and conclusions;

assessing the quality of an argument; developing reasonable positions; and defending one's

ideas. Taken in summary, these definitions reflect the desire for individual thinking based upon a process of reason, rather than driven by internal or external biases or prejudices.

Researchers have also suggested that critical thinking is an ongoing evaluative and analytical process that is open to improvement (Paul & Elder, 2008), positing that it is susceptible to biases, distortions, incompleteness and prejudices. These conditions, they have suggested, directly impact the quality of life, because deficient thinking skills may produce negative social and economic consequences (Paul & Elder, 2008). These researchers have argued that critical thinking must be cultivated; one way to do so may be through The Elements of Thought Web (Paul & Elder, 2008). The Web contains the following specific components of critical thinking skills that may be cultivated in students: purpose, questions, information, inferences/conclusions, concepts, assumptions, implications/consequences and points of view (Paul & Elder, 2008). Some of these skills are inherent in the ability to write persuasively; for example, researchers have discussed how learners' writing should possess a clear sense of purpose, be demonstrative of the ability to gather relevant information which supports the writer's position, and recognize information that affirms opposing points of view (Paul, 2000). For the current research, Paul and Elder's (2008) definition of critical thinking is suited to exploring the links between the critical thinking and the writing process: Critical thinking is, in short, self-directed, self-disciplined, self-monitored, and self-corrected thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities and a commitment to overcome our native egocentrism and sociocentrism. (p. 2)

Paul and Elder (1997) also identified four interrelated components of critical thinking: (a) an ability to engage in reasoned discourse (the faith in this ability is, according to Paul and Elder,

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the underlying assumption of a democratic society); (b) an ability to reason intellectually (with clarity, accuracy, precision, relevance, depth, breadth, and logic); (c) an ability to reason analytically and inferentially (the ability to formulate and assess goals and purposes, questions and problems, information and data, concepts and theoretical constructs, assumptions and presuppositions, implications and consequences, point of view and frame of reference); and (d) a commitment to a fundamental value orientation that includes certain *traits and dispositions* (intellectual humility, intellectual courage, intellectual empathy, intellectual integrity, intellectual perseverance, faith in reason and fair-mindedness) (Paul, Elder & Bartell,1997). Paul and Elder (1997) stressed the need for students to master two essential dimensions of thinking to become critical thinkers: students must be able to identify components of their thinking and also to assess their own thinking. These dimensions are the foundations for Paul and Elder's *Elements and Standards of Reasoning* which asserts that all reasoning: (a) is purposeful; (b) is an attempt to figure something out; (c) is based on assumptions; (d) is expressed from a particular point of view; (e) is based on data, information and evidence; (f) is expressed through, and shaped by, concepts and ideas; (g) contains inferences by which we draw conclusions and give meaning to data; and (h) leads somewhere, and has implications and consequences (Paul & Elder, 1997).

In recent master's level research (Scanlan, 2006), Paul and Elder's Elements and Standards of Reasoning (E&S) was infused into a standards-based curriculum in an attempt to improve the critical thinking skills of 12th-grade students enrolled in a rhetoric and composition class in a school in the western United States. Students of varying abilities were asked to write persuasive essays on the topics of child abuse, language, gender and culture, and the value of life. The study's sample included 38 students of mixed abilities and English Language Learners (ELL) students. Students' writing progress was assessed at intervals using a rubric that

emphasized five key areas key to rhetorical composition: Clarity of Writing, Analysis of the Author's Argument, Use of Supporting Information, Organization, and Grammar and Syntax. Through the introduction and use of a Paul and Elder's based critical thinking training program, student composition improved dramatically in the five key areas related to rhetorical composition, and among all of the learning ability groups (Scanlan, 2006). Although this research did not employ the use of a graphic organizer, the recognition of critical thinking as a component of successful student writing may provide positive results for subjects participating in future research studies.

Importance of teacher and student understanding of critical thinking. Teachers' and students' understanding of critical thinking as more than a notion or educational buzzword are also important. Through survey methodology, researchers (Paul et al.,1997) explored the perceptions of university professors ($n =145$) regarding their knowledge and teaching practices in relation to critical thinking, finding that although 89% of participants believed that critical thinking was the primary focus of their instruction, only 19% were able to clearly define critical thinking. Additionally, only 9% of participants reported that they were teaching critical thinking on a daily basis. The data also suggested that, although a majority of the respondents considered critical thinking to be of primary importance in their instruction, few reported that they incorporate and foster critical thinking within their instructional content (Paul, 1997).

Such findings are not limited to college professors. For example, Hillocks (2010) reviewed a series of advanced secondary level English textbooks and state writing rubrics designed to evaluate student writing. His research found that *none* of the texts or writing rubrics mentioned or discussed critical thinking and its relationship to writing; persuasive writing was vaguely discussed. In an English textbook containing over 1,100 pages, a scant 45 pages were

given over to the instruction of persuasive writing, and 1.5 pages were provided for a discussion on the logical appeals necessary for the writer's argument. In a critical vein, Hillocks discussed how the author of the textbook (Kinneavy, 1993) did not explain what logic entails in the writing process, or how logic can be recognized. Instead, Hillocks (2010) argued, textbooks such as this one encourage students to persuade their audiences through the use of emotion alone. Hillocks (2010) also claimed that textbooks oversimplify the use of logic and critical thinking in the writing process; both are relevant and serve as the substantive core of persuasive writing, which is assessed on state examinations (CSDE, 2010). Hillocks (2010) asserted that argument is at the heart of critical thinking, which students need to incorporate in their writing to achieve success in college. He concluded that students would not achieve the ability to construct argument through the venue of traditional school grammar, i.e., parts of speech, parts of sentences, gerunds, appositives and adverbial clauses. Instead, Hillocks (2010) advocated for students to become successful persuasive writers through highly interesting and challenging writing activities and immediate feedback and inspiration, thus creating what Csikszentmihalyi (1993) refers to as the *flow* of experience.

According to Csikszentmihalyi (1993), *flow* is a personal involvement within an activity that produces feelings of complete satisfaction and intense joy unmatched by previous activities. The personal mastery of a specific task such as sports, games, hobbies (or in this case, writing) creates a condition of self-control through experiences that maximize feelings of self-actualization. In summary, writers who are properly challenged may come to view their task as more than a rote or mechanical exercise (Davis, 2004).

These findings suggest that, to improve students' persuasive writing skills, it is necessary for educators to become familiar with critical thinking in conceptual and practical terms before

implementing strategies to teach persuasive writing in the classroom (Myers, 1986). Paul (2000) approached the relationship between critical thinking and persuasive writing within the context of pre-thinking the course that is being taught, largely through content immersion and instructor modeling. Paul viewed the relationship between critical thinking and persuasive writing as one of interdependence. Paul (2000) and others (e.g., Renzulli, 1977) suggested that students learn best when they are able to think and act like practitioners in a field: when they think like an historian in history, like a sociologist in sociology, and like an author in English. For the purpose of the current research, if one is to teach students how to think critically and write persuasively, then one must teach them how to begin to think like an author, utilizing the skills of an author.

Hillocks (2010) also tested the impact of an intervention requiring critical thinking, logic, and practitioner skills on the development of written arguments in 30 Chicago high school students. The class consisted of 9th- grade students of various racial and ethnic backgrounds. Six students were identified as learning disabled; two spoke English as a second language. Hillocks grounded his research in Toulmin's (1958) model of argument. In the study, researchers displayed a picture of a crime scene while reading aloud a background passage associated with the photograph. Using a Socratic method of questioning, Hillocks elicited responses from the students as to how the victim in the photograph met his or her demise. He encouraged participants to discuss their answers, and categorized their responses in descriptor columns labeled *Evidence*, *Rule* and *Claim* through the use of an overhead transparency student-writing organizer. Students were also asked to assume the role of detectives tasked to write an investigatory report of the scene in order to determine culpability. Results indicated that, after 4

days of writing exercises, the students were able to frame effective arguments based upon Toulmin's (1958) model of argument.

In conclusion, a review of the literature that examines the relationship between critical thinking and persuasive writing finds several recurrent threads. Specifically, this relationship is not mutually exclusive, and is an ongoing process between educator and student, which requires pre-thinking the course, student orientation, initial practice and day-to-day instruction (Paul, 2000).

Graphic Organizers and Writing

Seminal Research Related to Graphic Organizers and Writing

Earlier sections of the literature review discussed the importance of persuasive writing as it relates to critical thinking. The current section will focus on the use of graphic organizers and their impact on students' writing skills.

A graphic organizer is a visual and graphic display that depicts the relationship between facts, terms, and or ideas within a learning task (National Center on Accessible Instructional Materials, 2011). Graphic organizers were originally referred to as structured overviews (Estes, Mills, & Barron, 1969) and were first implemented in the late 1960s to develop student readiness prior to reading activities (Horton et al., 1990). Currently, graphic organizers come in a variety of forms and may include knowledge maps, concert maps, story maps, cognitive organizers, advance organizers, concept diagrams, and more (Hall & Strangman, 2002). Their use may enhance the writing process by providing the writer with an organizational framework that may be used to compare and contrast points of view, strengthening a persuasive letter or essay through the writer's acknowledgement and rebuttal of opposing points of view

The origins of graphic organizers are found in the seminal research and writing of

Ausubel (1960), and they were further developed in the 1960s in an effort to interpret

Ausubel's (1968) cognitive Theory of Reception Learning. Ausubel and Fitzgerald (1962)

considered textual material to be potentially meaningful, and he suggested that the meaning of

text occurs through the active interpretation of learner experiences using specific cognitive

processes. Ausubel (1963) suggested that it was imperative for educational researchers and

effective classroom practitioners to recognize clearly the differences among the principal

classifications of cognitive learning (i.e, rote and meaningful verbal learning, concept

formation, and verbal and nonverbal problem-solving).

Ausubel (1963) identified rote learning as a classroom instructional method that

requires the learner to memorize items such as letter symbols, foreign language vocabulary, and

chemical element symbols. Ausubel suggested that *receptive learning* occurs in situations in

which new information is internalized by the learner in its final form, i.e. the learner is exposed

to instructional methods such as scaffolding, differentiation and a comparison between

previously learned material and new material through the incorporation of advanced organizers

(Recker, 2011). Ausubel interpreted discovery learning as a process, which required the learner

to acquire content independently before internalizing it.

Ausubel (1968) cautioned that his definitive work should not be interpreted to portray

receptive learning in a negative light, but he did acknowledge the overuse of receptive learning

by educators. Ausubel (1968) found that:

    It would seem more reasonable to guard against the more common misapplications, and

        to relate the method to relevant theoretical principles and research findings that actually

deal with the long-term learning and retention of large bodies of meaningful, verbally-presented materials. (p. 18)

In his research, Ausubel (1963, 1968) placed a recurring emphasis upon meaningful learning. Ausubel defined meaningful learning as a distinctive learning process in which the learner employs discovery learning; he also suggested that the material learned should have the potential to be personally meaningful for the learner. Of particular interest to Ausubel was the relationship between meaningful learning and the learner's long-term capabilities for the retention of previously learned or newly learned information.

Ausubel (1960) also hypothesized that learning could be fostered by introducing central ideas, or subsumers, presented in advance to learners with graphic organizers or used congruently for the teaching of new material to students. His rationale for the use of organizers was based on three ideas: (a) the graphic organizers would enable students to highlight significant ideas while providing them with the ability to comprehend new ideas with logical meaning, stability and anchorage; (b) the benefit of using both general and inclusive ideas of a subject as the anchoring ideas (or subsumers) with the aim of increasing their relevance, stability, explanatory power and integrative capacity; and (c) the identification of existing relevant content within the cognitive structure and their clear identification and relevance to previously learned material as well as their relationship to new learning material. Ausubel (1968) summarized these aims by stating, "The principal function of the organizer is to bridge the gap between what the learner already knows and what he needs to know before he can successfully learn the task at hand"(p. 148). Ausubel further believed the major functions of an organizer were to provide for the scaffolding of newly introduced ideas, as well as the stable incorporation and retention of detailed and differentiated materials introduced at a latter point

in the learning process. Finally, organizers enabled the learner to discriminate between previously learned materials and similar or conflicting ideas within the cognitive learning process.

Ausubel (1968) identified and defined two types organizers: expository and comparative. Expository organizers were introduced to assist the learner in comprehending completely unfamiliar concepts or new materials. The expository organizer served as a bridge to new information or ideas through the identification and anchorage of ideas or terms previously familiar to the learner. Conversely, comparative organizers were used to integrate new ideas with similar concepts and to assist the learner to discriminate between new and existing ideas essentially different but perhaps confusingly similar.

Ausubel (1968) concluded his advocacy of organizers with a cautionary note. He suggested that the effectiveness of graphic organizers was dependent upon the organization of instruction and the materials presented to the learner. Their usefulness was also dependent upon their introduction and design; the learner must be instructed as to their uses and the terms or language used within the organizer must be clear and familiar.

Ausubel (1960) conducted research to test the hypothesis that the learning and retention of material unfamiliar but meaningful to students could be simplified through the advanced introduction of graphic organizers. Participants in this study were undergraduate students ($n =$ 80) enrolled in an educational psychology course at the University of Illinois. Students read a 500- word introductory paragraph on the metallurgical properties of plain carbon steel. Students studied each passage twice for 5 minutes on two separate occasions—48 hours before, and then again immediately before the introduction of a 2,500 word main passage, which they read for 35 minutes. This process was followed 3 days later with a 36-item multiple-choice

test. Students ($n = 40$) who utilized a graphic organizer in the experimental group to study new material performed significantly better ($M = 16.7$, $p < .01$) than students ($n = 40$) in the control group who used no graphic organizer ($M = 14.1$, $p < .01$). Ausubel (1960) concluded that graphic organizers presented to students in advance facilitated learning in two ways: by enhancing new information gleaned from the use of graphic organizers and by providing *optimal anchorage,* or the referential incorporation of knowledge that could possibly be overlooked or omitted by the learner. With a note of caution, Ausubel counseled that "the pedagogic value of advanced organizers obviously depends in part upon how well organized the learning material itself is" (p. 271).

Reflecting upon Ausubel's research, West (1991) observed that graphic organizers were effective only when the significance of the learner's prior knowledge was first recognized, and the organizer was used to "bridge the chasm between the known and unknown." (p.115). Before the graphic organizer was designed and introduced in the instructional process, West (1991) affirmed Ausubel's earlier observations that that the effectiveness of graphic organizers was dependent upon the organization of instruction and the materials presented to the learner. West (1991) believed that cohesive planning was incumbent upon the instructor, i.e. deciding on the necessity of content for unit or individual lessons, as well as their associated objectives.

Secondly, it was necessary for the instructor to determine if the learners possess prior knowledge on the topic before the introduction of a new lesson or unit. To emphasize this point, West (1991) observed "The failure of the learner to possess the prior relevant knowledge has been a major variable in many failures of advanced organizers." (p.125). Additionally, West (1991) listed the ideal features of an organizer in that it should be brief, abstract and

organized by outlining or arranging logically the main points, ideas or procedures of the

material that is presented to the learner:

1. It is a brief, abstract prose passage.

2. It is a bridge, a linking of new information with something already known. The
   foundation is *similarities* between the old knowledge and the new. Without
   substantial similarity, the advance organizer is not possible.

3. It is an introduction to a new lesson, unit or course.

4. It is an abstract outline of new information *and* is a restatement of prior knowledge.

5. It provides the students with a structure of the new information.

6. It encourages students to transfer or apply what they know.

7. It consists of content having considerable intellectual substance, material which is
   more than a common knowledge. (p.126)

While observing that the use of advanced organizers was largely limited to verbal

materials, West (1991) noted that organizers could be used as an aid in declarative, procedural

or conditional learning, or when "knowing that" "knowing how" or "knowing when" is taught

to the learner (p.116).

Effectiveness of Graphic Organizers

Since the 1960's, the result of K-12 research has been largely inconclusive as to the

effectiveness of graphic organizers in certain domains, such as using graphic organizers to

improve reading comprehension (e.g., Moore & Readance, 1984). However, research has

revealed that graphic organizers may be effective in certain situations, such as for students with

learning disabilities, particularly in the comprehension of implicit or inferred information

within textual passages that require students to write in response to question prompts (DiCecco & Gleason, 2002).

Moore and Readance (1984) conducted a meta-analysis of 23 published studies to determine whether students who used graphic organizers learned more than students who did not. Researchers computed 161 effect sizes; the average reported effect size was. 22 (small) and favored students who used graphic organizers. The researchers also examined the effects of graphic organizers on learning in relation to the timing of when they are used: advance organizers presented before the learning task, simultaneous organizers that were used during the task, and graphic post-organizers that were utilized after the learning task. Advance graphic organizers, or graphic organizers presented before the task (M = .27; SE = .06) and simultaneous graphic organizers (M = .08; SE = .05) demonstrated the least effect on learning. Graphic post-organizers (M = .57; SE = .17) demonstrated the greatest effect.

Moore and Readance (1984) also examined a second condition identified as instructional focus. This condition compared the differences in student learning between two instructional treatments: in one, students used graphic organizers to study general course content, and in the other they used graphic organizers to master specific reading passages. A smaller effect size (M = .12, SE = .07) was reported for the condition using graphic organizers to learn course content, in comparison to using them to understand specific reading passages (M = 36; SE = .06).

Finally, Moore and Readance (1984) examined the impact of using graphic organizers on vocabulary and reading comprehension by student grade level. Overall, a larger effect size was reported for using graphic organizers to comprehend vocabulary (M = .68; SE = .19) than for reading (M = .29; SE = .06.). However, at the elementary-school (M = .20; SE = .20) and secondary-school (M = .14, SE = .05) levels, a smaller effect size was reported than at the

university level (*M* = .66; *SE* = .16). Moore and Readance (1984) concluded that a learner's

maturity might enhance the effectiveness of using graphic organizers. An additional qualitative

analysis of the data reported that teachers who used graphic organizers had a tendency to feel

"more confident and competent while leading students through sections of the content" (p. 14).

Teachers working with graphic organizers also reported levels of increased organization, better

control of learning activities, clearer recognition of learning goals, and greater sensitivity toward

the requirements of the learning task. Moore and Readance (1984) suggested that the use of

graphic organizers as a component of the regular school schedule was an area worthy of further

scrutiny. However, they cautioned that common pitfalls of using graphic organizers exist,

especially on the secondary level: subject matter specialization, batch processing of students, and

the routinization of activities (Cusick, 1973). Lastly, Moore and Readance (1984) stated that

graphic organizers "might not be feasible at the secondary school level where each day teachers

have several course preparations and meet large groups of students in consecutive, relatively

brief classroom periods" (p. 16).

More recently, researchers (Butchart et al., 2009) measured the effectiveness of

computer-based graphic organizers on student California Critical Thinking Skills (CCTS) test

scores using a pre- and posttest design. An analysis of the posttest scores was conducted using

a *t*-test at the .05 alpha level. A final sample (*N* = 238) consisted of undergraduate students

who had completed a critical thinking course and had taken the CCTS pre- and posttests. The

focus of the research was to determine whether the CCTS scores of students who were taught

using argument mapping (graphic organizer) exercises with automated feedback were

significantly higher than students taught by other critical thinking methods, including a variety

of writing techniques such as automated feedback (*n* = 43), standard course (*n* = 65), argument-

mapping exercises with no automated feedback (n = 41), activity open-minded thinking exercises (AOMT) (n = 49), and peer instruction (n = 40). Students who were taught critical thinking skills using the argument-mapping exercise with automated feedback (M = 13.70, SD = 21.08) demonstrated significantly higher CCTS post-score gains than students who were taught through a standard course (M = 7.85, SD = 22.36, p = .01), students taught using the argument-mapping exercises with no automated feedback (M = 7.10, SD = 20.27, p = .01), and students taught using AOMT exercises (M = 6.63, SD = 23.93 p = .01).

Secondary students with learning and behavioral disorders in the mainstreamed classroom have also used graphic organizers successfully (Sundeen, 2007). Students with learning or behavioral issues may find graphic organizers helpful, specifically those who struggle with expressive essays or the basic mechanics of the writing process. Graphic organizers may serve to anchor the thoughts of a student and provide a visual, organizational pathway or writing planner for students with learning or behavioral difficulties, especially for persuasive writing tasks involving higher-level and critical thinking skills.

Sundeen (2007) noted that students who struggle with writing are less likely to receive instruction in effective written expression than in other academic areas. Compounding this difficulty is the fact that numerous federal and state mandates require the mainstreaming of students identified with mild to moderate learning or behavior disorders (CSDE, 2007), which may result in decreased time that mainstream educators may spend with students who struggle with writing skills. Consequently, contemporary students and educators may find the use of graphic organizers beneficial for several reasons, including effective writing preparation for state assessment tests such as the CAPT Writing across the Disciplines component.

The integration of writing to improve reading comprehension may be a reciprocal process (Knipper & Duggan, 2006), and both skills may be improved through effective strategies and the use of graphic organizers. The uses of several types of graphic organizers and strategies have been effective (e.g., guided writing procedures, learning logs, quick writes, framed paragraphs, and word maps) (Knipper & Duggan, 2006) in promoting such skills. Further research has also suggested that high school students with varying levels of learning ability may benefit from using graphic organizers (Horton et al., 1990).

Graphic organizers may have an impact on reading comprehension, and how the organizer is implemented may make a difference. Horton et al. (1990) conducted research to explore the effectiveness of using graphic organizers on the reading comprehension scores of three groups of secondary students: learning disabled students, remedial students, and regular education students. They conducted three separate experiments with the use of graphic organizers that were designed by teachers participating in the research study or by the researchers themselves. Participants in this study were students in three 7th-grade science classes ($n = 62$), three 7th-grade social studies classes ($n = 70$) and three high school social studies classes ($n = 48$). In the first experiment, students used a teacher-directed graphic organizer; they were led by their instructor in all aspects of the lesson through the use of transparency notes and questioning of the learners. In a second experiment, students used a graphic organizer on their own (self-study). They were required to follow teacher directions on the use of graphic organizers within specific lesson time frames using a variety of study methods selected by the learners. In a third and final experiment, students used a graphic organizer on their own, but the graphic organizer contained clues as to its use. Students were measured on both reading comprehension and their ability to complete the graphic organizer.

Performance for all students in regular education high school social studies using teacher-directed graphic organizers was higher than performance for students at this level using self-study methods (Horton et al., 1990). For example, learners in the high school social studies regular education group averaged 95% correct using a teacher-directed graphic and 63% correct in the self-study condition. Students with learning disabilities who completed a graphic organizer based on their reading also performed significantly better when using a teacher-directed graphic organizer than they did when using a self-study graphic organizer t (7) = 4.39, $p<.01$. These students averaged 73% correct with the teacher-directed graphic organizer and 30% correct with the self-study graphic organizer. Mean performance for remedial students also favored the teacher-directed graphic organizer over the self-study group t (8) = 5.44, $p<.01$. Remedial students averaged 80% correct with the teacher-directed graphic organizer and 39% with a self-study graphic organizer.

Student Affect When Using Graphic Organizers

Students respond positively when offered organizers to improve their critical thinking and writing skills; recently, researchers (Eberly & Trand, 2010) explored students' perceptions as they worked to incorporate critical thinking into the writing skills of freshman students ($n = 39$) at a large urban public university in the southeastern United States. Participants in this study were students enrolled in two composition courses. Students in the first writing course ($n = 20$) used a whole-class kinesthetic commentary activity involving a graphic organizer, followed by small focus groups for topical development and refinement. Students in the second course ($n = 19$) used a computer –based structured outline to write their essays in a sequential manner. A Likert-scale survey was distributed to both groups. In the first group, 73% of students reported that the exercise had proved helpful in topic development and refinement. In the second group,

almost 84% of the students reported that they planned to use or were currently using the structured approach to improve their critical thinking and writing skills (Eberly & Trand, 2010).

Chapter Summary

Despite the possibilities of using graphic organizers to improve student achievement in writing, a methodical approach which challenges students to think critically in the writing process must be developed in advance (Paul, 2000). Teachers must be trained for this, and the processes cannot be developed overnight. In addition, a student cannot be expected to write critically and persuasively through simple exposure to a graphic organizer. Crucial to the success of this intervention is the creation of a series of writing lessons by instructors who possess sound pedagogical knowledge, provide students with an orientation toward the program and its objectives, permits ample time for initial writing practice and consistent instruction for critical analysis, feedback and monitoring of student writing skills (Paul, 2000).

The ability for students to write persuasively and think critically is not mutually exclusive, and such skills cannot be developed overnight. They must be practiced consistently, and should be taught congruently within a developed and scaffold-based writing program. Persuasive writing and critical thinking is not limited solely for the purpose of testing assessment; they are life-long skills which may be utilized for a variety of objectives: college admission, securing employment, or persuading an audience for political or legal purposes.

The first part of the literature review focused upon the importance of persuasive writing. Great subjectivity and ambiguity exists with regard to the instructional process and assessment of persuasive writing, especially in relation to state writing test manuals designed to prepare students to write persuasively and the rubrics used by educators to assess them. This section of the review also noted that leaders in business, education, government and industry consider

writing an important, if not vital skill with life-long implications (Crowhurst, 1990). The section

concluded with the observations that ineffective writing skills can produce negative economic

effects upon civic government and business enterprises.

The second part of the literature review discussed the link between persuasive writing

and critical thinking, as well as the lack thereof in relation to expository writing within state

mandated testing programs such as the Interdisciplinary Writing assessment on the Connecticut

Academic Performance Test. Research suggests that students do not improve substantively in

their ability to think critically and write persuasively during middle and high school (Crammond,

1998). Largely, this may be attributed to deficient instructor beliefs, textual materials, methods

and strategies used to teach students on how to think critically and write persuasively (Paul,

Elder, & Bartell, 1997; & Hillocks, 2010). Student critical thinking skills must be cultivated,

developed and incorporated by trained teachers utilizing a uniform curriculum that recognizes

such aims and promotes them through consistent best practices (Paul, 2000).

The third part of the review focused upon research investigating the use of graphic

organizers in the areas of reading comprehension and persuasive writing. Seminal research

conducted in the 1960's (Ausubel, 1960; Ausubel & Fitzgerald, 1961) suggest that graphic or

advanced organizers enhance learning comprehension and retention in relation to comparative

and new information. Additional research studies (Moore & Readance, 1984) have produced

mixed results, while some researchers have focused on the use of graphic organizers for students

with learning disabilities (Horton, 1990, Sundeen 2007). Collectively, research studies that focus

upon the use of graphic organizers that promote critical thinking in order to assist students to

write persuasively are lacking; specifically in the area of state mandated testing. This research

study attempts to investigate if an interventional graphic organizer designed to promote student

critical thinking skills will have a positive impact upon student persuasive writing scores.

CHAPTER THREE: METHODOLOGY

This study examined the effect of using a critical thinking graphic organizer on student writing scores for a practice interdisciplinary writing assessment of the Connecticut Academic Performance Test (CAPT). This chapter describes the research methodology and materials for this study. The chapter consists of the following sections: description of the setting and sample, research questions and hypotheses, description of the treatment and control groups, instrumentation, research design, data analysis and data collection timeline.

Description of the Setting and the Sample

Setting

Research was conducted at a public high school in a suburban community (population 18,015) in the northeastern region of the United States (ZIPskinny, 2012). The median income of the community was $68,979, which was slightly below the county average of $78,892, but above the U.S. Average of $50,221 (U.S. Bureau of the Census, 2010). The ethnicity of the community was reported as 89.9% White, 1.2% Black, 3.5% Asian, and 3.7% Hispanic/Latino. Educationally, 88.9% of the total adult population held a high school diploma or higher, and 36.7% reported having a Bachelor's degree or higher. As of 2010, 61.8% of the population was married and 65.9% owned their homes and had resided at the same address for the past 5 years. Three elementary schools, one middle school, and one high school served a total student population of 3,190 students.

The high school where the study took place served 987 students in grades 9-12 (CSDE, 2010). Of this number, 106 students (10.7%) at the high school met the eligibility requirements for a free or reduced-price lunch; the state average is 27.9%. The staff consisted of 78 certified teachers, 3 paraprofessionals, 2 library media specialists and/or assistants, 9.5 special education

teachers and instructors, 5 paraprofessional instructional assistants, 7 counselors, social workers, and school psychologists, 1.2 school nurses, and 22.6 additional non-instructional support staff such as administrative assistants, custodians and maintenance staff. The teachers in the high school have taught for an average of 12 years, and 70.1% have earned a Masters degree or higher.

The ethnicity of the students attending the high school was: White ($n = 802$), Black ($n = 25$), Hispanic ($n = 97$), Asian-American ($n = 60$), and Native American ($n = 3$). The school reported eight students who were not fluent in English (.08%); the state average was 3.6%. The dropout rate was .02%, with 98.3% of students graduating in 2009. Of these graduates, 88% continued on to enroll in post-secondary education, and 4.4% were employed or joined the military (CSDE, 2010).

 Average class sizes were 19.7 students in Mathematics, 18.5 students in Science, 15.5 students in English and 16.5 students in Social Studies (CSDE, 2010). Prior to graduating, students are required by the district to earn four credits (one credit is equal to 1 year) in mathematics (72.9% receive four or more credits), three credits in science (100% receive three or more credits), four credits in social studies (74.7% receive four or more credits), one credit for Level 3 or higher in a world language (67.6% receive one or more credits), two credits in vocational education (83.6% receive two or more credits), and two credits in the arts (49.8% receive two or more credits). Students were tested in 16 different Advanced Placement (AP) courses, and the state average of all AP offerings per secondary school was 9.5%. Within the 16 AP offerings, 72.7% of students scored a 3 (qualified to receive college credit or advanced placement) or higher (state average is 71.3%) on the annual May administration of the AP examinations (CSDE, 2010).

Sample

       Student participants. This study consisted of a sample of convenience, or a study of subjects taken from a group that was conveniently accessible to the researcher ($n = 123$) of ninth-grade students enrolled in three levels of a full-year freshman World History I course who participated in a practice-CAPT writing assessment program: Level 1 (Honors), Level 2 (College Preparatory) and Level 3 (Academic).

       Students were randomly assigned by classrooms into two groups: (a) 55 students who participated in a treatment intervention who received instruction that utilized a critical thinking graphic organizer based on Paul and Elder's Critical Thinking Web (1992); and (b) 68 students who participated in a comparison condition who received instruction and wrote persuasive essays based upon the use of a traditional writing graphic organizer provided by the state. Students using the Paul and Elder's critical thinking graphic organizer group will hereafter be referred to as the treatment group, and students using the traditional writing graphic organizer group will hereafter be referred to as the comparison group.

       Consent to conduct this research study was granted by the Western Connecticut State University (WCSU) Institutional Review Board (IRB). The assistant superintendent, principal and teachers granted permission for the study to take place at the participating school (see Appendices J, K, and L). Prior to the start of the study, the researcher met the classroom teachers for 2 hours to describe the research study, provide preliminary training, and request their permission to participate. Three teachers agreed to do so, and one declined.

       Before the first day of school, the researcher met with three participating teachers and disseminated permission slips to be returned to the classroom by a specified date within 7 days if students' parents wished for them to participate (Appendix M). Teachers introduced the research

project to their students on the first day of school, as well as to the students' parents and

guardians during an open house event held that evening. Student assent forms (Appendix N)

were distributed by the teachers the following day and collected over the next several days.

Participation rates are described in Table 1. Potential participants ($n = 189$) consisted of

students enrolled in all 9th-grade World History I courses. A total of 66 students declined to

participate in the research study, 123 students participated in the pretest, and 116 participated in

the posttest. Prior to the administration of the posttest, 5 potential participants opted out of the

comparison group, and 2 opted out of the treatment group. The student participation rate in the

research study was 61.3%, calculated as the number of students who took the posttest out of all

potential participants. .

Table 1

Comparison and Treatment Participation

Group	Potential Participants	No Permission	Assessed With Pretest	No Posttest	Assessed With Posttest
Comparison	97	31	68	5	63
Treatment	92	35	55	2	53
Total	189	66	123	7	116

Students within the sample of convenience were enrolled across 10 Freshman World

History I courses consisting of three academic levels: (a) Honors World History (Level I); (b)

College Preparatory World History (Level II); and (c) Academic World History (Levels III and

IV). Per district policy, students are assigned to academic level based upon their middle school

Connecticut Mastery Test (CMT) scores in reading comprehension and writing, or enroll with

parental and/or guidance counselor advisement. Students enrolled in the Honors Level I course

must demonstrate evidence of strong individual motivation and achievement, as well as the ability to work independently. According to the school district's program guide, Honors Level students must possess and demonstrate critical analysis and thinking skills through classroom work and outside assignments, complete daily homework, and maintain their ability to keep pace with an accelerated rate of instruction.

Similar to their Honors Level peers, students working at the College Preparatory Level focus on the development of abstract concepts, critical analysis, independent learning and daily homework. College Preparatory Level students must also maintain a sufficient pace of study that is required to cover the course material described in the syllabus.

In contrast to their Honors and College Preparatory peers, students enrolled within Academic Levels are introduced to historical concepts through kinesthetic or hands on approaches, with an emphasis on individual skill development. Student achievement is measured by formal and informal assessments, and frequent homework is required.

Teachers and classrooms of students were randomly assigned to treatment and comparison groups across all ability levels. Random assignment is defined as a means by which each sampling unit (i.e., classes) has an equal chance of being in each experimental condition (Gall, et al., 2007). The makeup of the convenience sample consisted of two Honors Level courses (one comparison, one treatment); six College Preparatory courses (two comparison, four treatment); and one Academic course (comparison) (Table 2). Teachers taught both conditions; that is, each of the three teachers taught at least one treatment classroom and one comparison classroom.

Table 2

Comparison and Treatment Participation by Group and Class Ability Level

Group	Ability Level	Potential Participants	No Permission	Actual Participants	Opted Out
Treatment	Honors	18	3	15	0
	College Preparatory	53	18	35	0
	Academic	21	16	5	2
Total - Treatment		92	38	55	2
Comparison	Honors	42	5	37	1
	College Preparatory	43	20	25	1
	Academic	12	6	6	3
Total - Comparison		97	31	68	5
Total		189	66	123	7

Adult participants. A total of three teachers also participated in this study (see Table 3). One teacher taught four sections of 9th-grade World History I; three of these sections were included in the study. The three sections consisted of an Honors Level comparison section, and two College Preparatory sections (one comparison and one treatment). The second teacher taught four sections of ninth grade World History I. Each of these sections was included in the study: three college preparatory sections (one comparison, two treatment) and one academic level comparison section. The third teacher taught three sections of World History I, which were included in the study. These three sections consisted of two Honors sections (one comparison and one treatment) in addition to one College Preparatory treatment section. Each class met 4

times per week for 54 minutes on a rotating schedule basis. Teacher participants were relatively

new to the profession, with an average of 4 years of experience. All of their teaching experience

had been obtained in the participating school district. One teacher was male, and two were

females.

Table 3

Demographics – Adult Participants

Teacher	Gender	Age	Years Teaching	Years in Current Position	Levels of Sections Taught
1	Female	24	3	3	Honors (1) College Preparatory (2)
2	Male	29	5	5	College Preparatory (3) Academic (1)
3	Female	27	5	5	College Preparatory (1) Honors (2)

Research Questions and Hypotheses

This study examined the impact of the independent variable, Type of Program, with two

levels (treatment – which used Paul's Elements of Reasoning Modified Writing Graphic

Organizer, and comparison – which used the state-provided writing graphic organizer) on writing

scores as measured by the dependent variable – practice CAPT writing mean assessment scores.

Focus groups were also conducted for teachers and certain students who participated in the

treatment groups to assess their experiences working with a critical thinking writing graphic organizer.

Using a systematic approach, this research addressed the following questions:

1. Is there a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th-grade students who participate for 12 weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and those who do not?

2. How do 9th-grade students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing pretest, but who did meet goal on the posttest, view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

3. How do teachers in the treatment condition view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

For research question one, the researcher tested the non-directional alternative hypothesis, namely that there would be a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores for 9th-grade students participating in a critical thinking intervention program and those who do not.

Research Design

The current study used a quasi-experimental randomized pretest posttest design that required the random assignment of participants to select groups, as well as the manipulation of the internal variable, or IV. True experimental design has been identified by Gall, Gall and Borg (2007) as the most demanding type of design because it "greatly strengthens the internal validity of experiments" (p. 416). However, due to the fact that students operate within intact classroom

groups, random pupil assignment is not always feasible; thus, a quasi-experimental design may be employed. Because their unit of assignment consisted of classes or groups and not individual students, the design of the current study was quasi-experimental. The researcher selected the names of the participating classes and placed them into treatment or comparison categories on a blind basis. A randomized treatment and comparison group, pretest posttest design was used to compare two 9th-grade practice CAPT writing preparation programs: (a) treatment (students who participate for 12 weeks in a critical thinking writing intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer), and (b) comparison (students who used the Standard State Writing Graphic Organizer).

Table 4

Research Design

Group	Pretest	Treatment	Posttest
Treatment	O	X	O
Comparison	O	Y	O

(Gall, et al., 2007, p. 417)

The current study also integrated mixed methods. A mixed methods design is beneficial because it can capitalize on the respective strengths of each approach. Pairing quantitative and qualitative components of a larger study can achieve various aims, including corroborating findings, generating more complete data, and using results from one method to enhance insights attained with the complementary method (Curry, Nembhard & Bradley, 2009).

This study implemented a Convergent Practice Mixed Method Design, which is one of the most conventional classes of mixed methods design (Creswell & Plano-Clark, 2007). For this design, quantitative and qualitative data are gathered simultaneously and employed for triangulation purposes. In the current study, qualitative data gathered through the use of focus

group protocol questions (Appendices C and D) for students and teachers were used for the purpose of enhancing the quantitative results.

Description of the Treatment and Comparison Groups

Treatment Group

The treatment group was comprised of 55 students across three academic levels: (a) Honors World History I ($n = 15$), (b) College Preparatory World History I ($n = 35$), and (c) Academic World History I ($n = 5$). Regardless of academic level, World History I classes met 55 minutes four times per week.

Students were initially introduced to the mechanics of the Paul's Elements of Reasoning Modified Writing Graphic Organizer (Paul, 1992) during a 30-minute teacher-led instructional session. For the remaining 25 minutes of the period, students practiced filling in the organizer with information obtained from an historical secondary sources materials packet provided by their World History I teacher. The packet contained an instructional cover page that introduced the topic question. An example of a topic question is: *Which city-state was the strongest/most powerful: Athens or Sparta?*

In addition to the topic question, students in the treatment group were required to read the instructional cover page that contained historical background relevant to the question and the writing task instructions. To address the question, students were instructed to read several excerpts from historical primary source articles pertaining to the question (e.g., articles on Athenian and Spartan societies) while simultaneously incorporating citation evidence using the Paul's Elements of Reasoning Modified Writing Graphic Organizer.

During a 12-week period, teachers in the treatment group utilized a number of instructional strategies while implementing the use of the Paul's Modified Writing Graphic

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Organizer; however students were not required to write a complete essay each time the organizer was used. Seven lessons focused on the proper completion of the organizer or used the Paul's Modified Writing Graphic Organizer while practicing writing skills related to essay content and format. During these lessons, teachers emphasized the importance of critical thinking and persuasive writing by focusing and discussing with students sections of the organizer designed for this purpose.

The Paul's Modified Writing Graphic Organizer contains several features that differ from the Standard State Writing Graphic Organizer (Appendix G). The Paul's Modified Writing Graphic Organizer provides an oval shaped area for the student to record the topic question, followed by a rectangular area that asks the student to briefly discuss the importance of the topic. Below this area are two support or oppose columns that prompt the student to fill in the following categorical information: (a) Points of View on Issue or Problem, (b) Reinforcing Evidence (Quotations, Facts, Etc.), (c) A Belief That Makes Us Support (or Oppose) this Issue or Problem, (d) Consequences for Supporting (or Opposing) this Position and (e) Thesis Statement.

Students incorporated the Paul's Modified Writing Graphic Organizer while reading primary source materials for information for the purpose of preparing to write persuasive essays. Simultaneously, they focused on essay mechanics, i.e., writing introductory paragraphs/thesis statements, paragraph structure and conclusions. Historical and cultural topics such as the Neolithic Ages were discussed, as well as Ancient Grecian government and society (e.g., determining if Athens or Sparta was the strongest/most powerful city-state). The teachers selected the topics and created the primary source packets, then allocated class time ranging from 25 to 55 minutes per week for the purpose of critical thinking and persuasive writing skills.

In conjunction with these aims, teachers allotted between 25 to 40 minutes of instructional time each week in order to utilize a variety of instructional strategies related to practice CAPT practice writing. Students built upon previously learned writing instruction such as the ICE method (Introduce, Cite and Explain) when forming thesis statements or responding to a writing prompt question (e.g., comparing key similarities or differences between Hinduism and Buddhism). Their writing samples were reviewed and edited for constructive feedback by their teacher or small peer discussion groups, with an emphasis on proper thesis statement and essay format. To improve student reading and writing skills, teachers introduced articles on the Neolithic Period and students prepared written arguments concerning the similarities and differences between prehistoric Neanderthals and Australopithecus humans.

Comparison Group

The comparison group was comprised of 68 students across three academic levels: (a) Honors World History I ($n = 37$), (b) College Preparatory World History I ($n = 25$), and (c) Academic World History I ($n = 6$). Regardless of academic level, World History I classes met 55 minutes 4 times per week. Teachers utilized the same curriculum and curricular pacing/benchmarks for comparison students as their treatment group peers. Historical and cultural/religious topics such as the Neolithic Age, Buddhism, and Hinduism were examined and discussed.

Similar to their treatment group peers, students in the comparison group were introduced to the Standard State Writing Graphic Organizer and informational source articles packet during a 30 minute teacher-led instructional session. For the remaining 25 minutes of the period, students practiced filling in the organizer with information obtained from an historical secondary sources materials packet provided by their World History I teacher. The packet contained an

instructional cover page that introduced students to the following topic: Prehistoric Time Period

– Australopithecines and Neanderthals; are they alike or different?

In addition to the topic question, the students were required to read the instructional cover

page that contained the anthropological background to the question along with the writing task

instructions. To address the question, the students were instructed to read two historical

secondary source articles (e.g., The Myth of the Neanderthal People and The Discovery of

Lucy), while simultaneously incorporating citation evidence using the Standard State Writing

Graphic Organizer.

During these lessons, teachers also emphasized the importance of critical thinking and

persuasive writing by focusing and discussing with students the two main header prompts for the

organizer columns designed for this purpose; *Arguments For; Supporting Evidence or Claims*

and *Arguments Against; Supporting Evidence or Claims.* Students were instructed and coached

by their teachers to find and record as many examples as possible pertaining to the prompts, then

incorporate them into their argument that supported their chosen position. The Standard State

Writing Graphic Organizer (Appendix G) consists of two separate lined rectangular boxes

containing two columns that prompts the student to fill in the following information: (a)

Arguments - For (Issue); Supporting Evidence or Claims, and (b) Arguments – Against (Issue);

Supporting Evidence or Claims. Teachers selected the topics and created the primary source

packets, then allocated class time ranging from 25 to 55 minutes per week for the purpose of

improving student persuasive writing skills. During the 12-week period between the pre and

posttests, students in the comparison and treatment group completed four practice CAPT

persuasive writing interventions on topics related to their curriculum (e.g., determining if Athens

or Sparta was the strongest/most powerful city-state) or by taking a position on a contemporary

issue with previously released examples of the CAPT Writing Across the Disciplines assessment (e.g., Should Parents Monitor Teenage Driving With Electronic Devices?).

Methods of instruction and writing interventions to prepare the students for the CAPT Writing Across The Disciplines assessment were similar to the treatment group, i.e., reading for information, practice thesis statements, and writing sessions modeled upon a five-paragraph essay structure. The lessons were designed to introduce new information or build upon previously learned material within the 9th grade World History I curriculum.

Students within the comparison group classes were instructed in the use of the standard CAPT writing organizer for 30 minutes and utilized the standard organizer for 30 to 55 minutes per week when participating in practice writing exercises designed to prepare them for the CAPT writing assessment. Since 1995, this organizer has been used by the Connecticut State Department of Education in the preparation and assessment of students for the CAPT writing component (Appendix G).

Instrumentation

Data were collected using five instruments, described below.

CAPT Grading Rubric (Modified) – Pretest and Posttest

The CAPT is formally scored through the derivation of scaled scores from raw scores. However, when alternate practice CAPT assessments are developed, the raters often use holistic scoring (0-6), deriving one overall score for the essay. In this study, students' total pretest and posttest scores on the practice CAPT assessment were comprised of five categories that made up the total score: taking a position, providing support, comprehensiveness, organization, and clarity/fluency. Two raters with expertise in teaching persuasive writing used guiding questions taken from the states' grading manual (see Appendix A; CSDE, 2010a) and assigned each of the

five categories a dichotomous score of 0 to 1. A score of 0 indicated an absence of the trait, and a score of 1 indicated the presence of the trait. Points from each of the five categories were added to obtain the overall score. In addition, a bonus point was added for a near-perfect paper. Some students attained a score of 6 in this manner, which matched the state's grading scale of 0 to 6.

Validity and reliability were reported with the CAPT assessment and grading rubric. The grading rubric for the CAPT assessment is reliable; Cronbach's Alpha is .802. For validity, a study of the strands proposed for the second generation CAPT was conducted by the Connecticut State Department of Education, which sought the input of approximately 4,000 Connecticut educators, parents, and additional citizens. The purposes of the study were twofold: (a) to determine the significance of the skills included on the Writing Across the Disciplines strand; and (b) to determine if the content and skills required in the strand were being taught prior to the conclusion of the 10th grade. Respondents to the survey reported that the skills required by the writing strand were significant educational outcomes in which students should receive instruction before testing (Hendrawan & Wibowo, 2011), and skills and content were being taught. The standardized CAPT prompt included a reading and response booklet.   After reading two published (700 - 1,000 word) nonfiction articles, students were allotted 65 minutes to write their persuasive essays that identified and took a position supported by evidence on a topic.

Student Focus Group Interview Protocol

The researcher-designed qualitative interview protocol (Appendix B) for students was utilized with students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing practice pretest but did meet goal on the posttest. The four questions were constructed in such a

way as to determine how the students viewed their experiences using the modified graphic

organizer and whether they believed it helped them to improve their persuasive writing skills.

Teacher Focus Group Interview Protocol

A researcher-designed qualitative interview protocol for treatment group teachers

(Appendix C) was conducted by the researcher. The purpose of these four questions was to

determine how the teachers viewed their experience of using the modified graphic organizer and

whether they believed it helped students to improve their persuasive writing capabilitie

Demographic Forms

Basic teacher (Appendix D) and student (Appendix E) demographic forms were used to

identify key characteristics of the sample.

Teacher Logs

Teachers in both the treatment and comparison conditions were asked to use their graphic

organizers at least once a week, and they maintained a log (Appendix F) documenting the

number of times they used the method. In the logs, teachers also discussed the types of writing

methods introduced to the class including thesis writing, whole class essay reviews, peer editing

groups and teacher to student writing conferences based on individual student need.

<center>**Description and Justification of the Analyses**</center>

The software package SPSS v.15 (IBM, 2006) was used for the statistical analyses of

research question one.   For research question one, 50 pretest scores were randomly selected and

analyzed to determine inter-rater reliability. The correlation between the raters was significant: r

$(48) = .787\ p < .01$. Additionally, 50 posttest data items were analyzed to determine if

differences existed between the two raters using the same method. Similar to the pretest, posttest

inter-rater reliability was significant; $r\ (48) = .736\ p < .01$.

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The independent categorical variable was Type of Program with two levels: treatment (Critical Thinking-Based Writing Organizer) and comparison (State-Issued Writing Organizer). The dependent variable was the practice CAPT Writing across the Disciplines posttest scores. A Mann-Whitney using practice CAPT Writing Across the Disciplines posttest scores was used to determine if there was statistical significance between the treatment and comparison groups.

The design for question two was qualitative using focus group methodology. Ten students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing practice pretest but met goal on the posttest were randomly selected and invited to a focus group interview. Seven students responded to the interview request. The researcher used a focus group protocol (Appendix B) to question these students about their perceptions regarding working with the modified Paul and Elder's graphic organizer. Their responses were audio recorded, transcribed and codified for qualitative analysis using Saldana's (2009) Cycle coding method, in which the researcher explores the data, looking for patterns and themes. A second researcher with expertise in qualitative coding coded the data and confirmed the codes. In addition, an outside auditor reviewed all the codes and categories.

Question three was also qualitative in design. The researcher utilized a focus group protocol (Appendix C) for teachers at the conclusion of the research study to determine how these teachers viewed their experience in working with the modified graphic organizer, and if they believed it had helped their students to improve their persuasive writing capabilities. Their responses were coded for qualitative analysis and analyzed in the method described above.

Three levels of coding techniques were used to address research questions two and three – open coding, axial coding and selective coding. Two researchers coded the data for the purposes of triangulation and to ensure trustworthiness. In order to verify core categories, an

interpretive analysis technique was used (Gall et.al. 2007) to identify general themes within the data.

Data Collection Procedures and Timeline

The following procedures were followed according to the timeline.

1. Approval from the superintendent of schools (Appendix J) and the building principal (Appendix K) was granted to conduct experimental educational research in a selected high school in the district. (Summer 2011)

2. Approval was granted by Western Connecticut State University's Institutional Review Board to conduct the study. (May 2011)

3. The researcher met with teachers from the treatment and comparison groups to introduce the study and teacher consent forms (Appendix L) were signed. (August 2011)

4. The researcher met with treatment and comparison group teachers to provide training in the use of the Paul and Elder's critical thinking writing organizer (Appendix H). (September, 2011)

5. Teachers' classes were randomly assigned to treatment or comparison groups. (September, 2011)

6. Parental/Guardian Consent (Appendix M) and Student Assent (Appendix N) forms for student research participants were distributed and collected. (September, 2011)

7. The practice Connecticut Academic Performance Test (CAPT) Writing Across The Disciplines pretest was administered to students in the treatment and comparison groups. (September, 2011)

8. Teachers within the treatment group trained in the implementation of the Paul and Elder's critical thinking writing organizer incorporated it as a part of their weekly regular persuasive writing exercises. (September – December 2011)

9. Teachers in the comparison group implemented the state CAPT writing organizer as a part of their weekly regular persuasive writing exercises. (September – December 2011)

10. Teachers' administration of treatment and comparison CAPT writing posttest assessment. (January 2012)

11. Researcher analysis of data and completion of writing. (January 2012 – June 2012)

12. The researcher met separately with teachers and students to conduct a focus group protocol. (March, 2012).

Statement of Ethics and Confidentiality

A proposal for this study was submitted and accepted by the Western Connecticut State University Internal Review Board. A letter of permission from the building principal (Appendix K) and the assistant superintendent (Appendix J) outlining the rationale, procedures and a timeline was secured. This research project did not receive funding or training assistance by any outside organization.

Permission to participate in this study was provided by parents/guardians of all students selected for the sample. Informed consent forms were distributed and collected from the parents/guardians of the participants (Appendix M) selected for the study and only those participants with signed consent were permitted to participate. To maintain confidentiality, scores and were reported in group format. Additionally, the names of all students and teachers responding to written questionnaires or focus group interviews have been omitted.

CHAPTER FOUR: ANALYSIS OF DATA

AND AN EXPLANATION OF THE FINDINGS

The purpose of the current mixed methods study was to investigate if the use of Paul's Elements of Reasoning Modified Writing Graphic Organizer (Paul, 1992) would improve student scores on the Interdisciplinary Writing Assessment of the CAPT, in contrast to the comparison group who used traditional graphic organizers provided by the state. Three major research questions were addressed:

1. Is there a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th-grade students who participate for 12 weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and those who do not?

2. How do 9th-grade students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing pretest, but who met goal on the posttest, view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

3. How do teachers in the treatment condition view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

The results for Chapter four are presented in five sections: (a) methodology (b) description of the data (c) descriptive statistics (d) results, and (e) summary of results.

Methodology

This mixed method research study utilized a quasi-experimental pretest/posttest comparison group design. Ten intact groups were used, with random assignment of classrooms

to treatment and comparison groups. A total of three teacher participants were randomly assigned to each instructional strategy, so that each teacher taught persuasive writing using a critical thinking graphic organizer (Appendix H) in the treatment group and a state-provided graphic organizer in the comparison group (Appendix G). For the first research question, students' ability to write persuasively using a practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing Assessment was measured before and after implementing the treatment in this study. For the second research question, a student focus group was conducted using a researcher-designed protocol (Appendix B). Seven students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing Assessment pretest but who did meet goal on the posttest were randomly selected for participation in the focus group. For the third research question, teachers in the treatment condition were asked to participate in a focus group (Appendix C) for the purpose of sharing their ideas about using the critical thinking graphic organizer.

Quantitative and qualitative data were collected using six instruments: a teacher demographic information form (Appendix D), a student demographic information form (Appendix E), the CAPT Grading Rubric (Modified) (Appendix A) pre- and posttest, a researcher-designed student focus group protocol (Appendix B), a researcher-designed teacher focus group protocol (Appendix C), and a teacher log (Appendix F) for both comparison and treatment groups.

Description of the Data

In this study, student practice CAPT pre and post assessment persuasive essay writing data were collected and scored through a modified version of the CAPT scoring rubric. To establish inter-rater reliability, 50 pre- and post-assessment essays were randomly selected and

scored by two independent raters. Quantitative scores (1-0) were assigned for each of the

following five subcomponents: taking a position, support, comprehension, organization, and

clarity/fluency). In order to numerically match the standard state scoring scale, a sixth bonus

point component (1-0) was added for a near-perfect paper. Table 5 presents a description of the

variables that were entered into SPSS for the pretest, and Table 6 presents a description of the

variables that were entered into SPSS for the posttest.

Table 5

Code Book for Pretest Values

SPSS Name	Description	Possible Values	Code
Rater ID	Unique Code for the Rater	Rater Number One	1
		Rater Number Two	2
Condition	Type of Program	Control	0
		Treatment	1
Teacher	Name of Teacher	Teacher number 1	1
		Teacher number 2	2
		Teacher number 3	3
Pre Taking a Position 1	Pre Test Score 1	Yes	1
		No	0
Pre Support 1	Pre Test Score 1	Yes	1
		No	0

Table 5 (continued)

Code Book for Pretest Variables

SPSS Name	Description	Possible Values	Code
Pre Support 1	Pre Test Score 1	Yes	1
		No	0
Pre	Pre Test Score 1	Yes	1
Comprehensiveness		No	0
Pre Organization	Pre Test Score 1	Yes	1
		No	0
Pre Clarity and	Pre Test Score 1	Yes	1
Fluency 1		No	0
Pre Bonus 1	Pre Test Score 1	Yes	1
		No	0
Pre Test 1	Pre Test Total 1 Score	0-6	Actual Value

Note: Scores were repeated for Rater Two.

Table 6

Code Book for Posttest Variables

SPSS Name	Description	Possible Values	Code
Rater ID	Unique code for the rater	Rater Number One	1
		Rater Number Two	2
Condition	Type of Program	Control	0
		Treatment	1

Table 6 (continued)

Code Book for Posttest Variables

SPSS Name	Description	Possible Values	Code
Teacher	Name of Teacher	Teacher number 1	1
		Teacher number 2	2
		Teacher number 3	3
Post Taking a Position 1	Post Test Score 1	Yes	1
		No	0
Post Support 1	Post Test Score 1	Yes	1
		No	0
Post Comprehensiveness 1	Post Test Score 1	Yes	1
		No	0
Post Organization 1	Post Test Score 1	Yes	1
		No	0
Post Clarity and Fluency 1	Post Test Score 1	Yes	1
		No	0
Post Bonus 1	Post Test Score 1	Yes	1
		No	0
Post Test 1	Post Test Total 1	0-6	Actual Value
Teacher	Name of Teacher	Teacher number 1	1
		Teacher number 2	2
		Teacher number 3	3

Note: Scores were repeated for Rater Two.

Descriptive Statistics

Student Demographics

Participants in this study consisted of 116 students assigned to 10 classes. Participating students included 52 males (44.8%) and 64 females (55.2%). Within this group of students, 6 students identified themselves as Asian (5.2%), 1 as African-American (0.9%), 95 as White (81.9%), 5 as two or more races (4.3%) and 9 as Hispanic of any race (7.8%).

Data Coding and Entry

To ensure the confidentiality of all participants, the researcher coded all essays with identification numbers. Preceding data entry, a codebook (Table 7) was created by the researcher to guarantee that each variable possessed justifiable and practical values (Meyers, Ganst, & Guarino, 2006). The researcher entered the data using an SPSS program, and two researchers verified the data entry.

Table 7

Code Book for Student Demographics

SPSS Name	Description	Possible Values	Code
Student ID	Six character ID #	Varies	Actual Value
Gender	Gender	Male	0
		Female	1
Ethnicity	Racial Background	American Indian or Alaska Native	1
		Asian	2
		Black or African American	3

Table 7 (continued)

Code Book for Student Demographics

SPSS Name	Description	Possible Values	Code
		Native Hawaiian or Other Pacific Islander	4
		White	5
		Two or More Races	6
		Hispanic of Any Race	7
		Honors	1
		College Preparatory	2
		Academic	3

Data Screening

Prior to proceeding with the data entry and analysis, the data was visually inspected and verified for accuracy. This procedure checked for the appropriateness of numerical codes for the values of each variable within the study and is commonly referred to as code or value cleaning (Meyers, et al., 2006). Following this procedure, the researcher ran frequency distributions on a Statistical Package for the Social Sciences (SPSS) program (Green & Salkind, 2008) to ensure that each case in the data file contained accurate data, and that no variable contained more than 5% of missing values. The frequency distribution confirmed that the data were accurate and the

values complete. Additionally, all data from pre- and posttests were reviewed for accuracy.

Subsequently, the data were determined to be acceptable and were adopted for further analysis.

<center>**Results**</center>

Research Question One

        Testing the assumptions for pretest data. Data variables for the pretest were summed

into one variable, and then assumptions were checked on this variable. One of the assumptions

of an ANOVA is that cases are independent (Meyers et al., 2006). The researcher checked to

make sure that no students were in both the treatment and control groups. Another assumption

for an ANOVA is that the dependent variable is normally distributed for each population (Green

& Salkind, 2008). Because the data were not normally distributed, a Shapiro-Wilks test (Meyers

et al., 2006) was performed on pretest data which indicated that the data differed significantly

from the normal distribution ($p <.001$). Because data were not normally distributed, a non-

parametric test was required.

        Analyzing pretest scores. When data are not normally distributed, it is recommended

that a non-parametric procedure be performed (Green & Salkind, 2008). A Mann-Whitney test

was therefore performed on the pretest data (Table 8) to determine if there was a significant

difference in the pretest scores across the groups prior to the intervention. The independent

variable was the Type of Program, and the dependent variable was the students' Pretest Scores

(summed from the six individual component variables). Results of the Mann-Whitney analysis

indicated no significant difference across the levels of the independent variable ($p = .507$),

suggesting that a covariate was unnecessary. Table 8 presents the means and standard deviations

for students' pretest scores.

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Table 8

Means and Standard Deviations of Treatment and Comparison Group Practice CAPT Writing Across the Disciplines Pretest Scores

Type of Program	Mean	Standard Deviation
Treatment	3.92	1.59
Comparison	4.06	1.64
Overall	4.00	1.61

Testing the assumptions for posttest scores. One of the assumptions of an ANOVA is that cases are independent. The researcher checked to make sure that no students were in both the treatment and control groups. Another assumption for an ANOVA is that the dependent variable is normally distributed for each population (Green & Salkind, 2008). A Shapiro-Wilks test was performed on posttest data that indicated that the data differed significantly from the normal distribution (p < .001). Because data were not normally distributed, a non-parametric test was required.

Analyzing posttest scores. When data are not normally distributed, it is recommended that a non-parametric procedure be performed (Green & Salkind, 2008). A Mann-Whitney test was therefore performed on the posttest data to determine if there was a significant difference in the posttest scores across the groups after the intervention. The independent variable was the Type of Program, and the dependent variable was students' Pretest Scores (summed from the six individual component variables). Results of the Mann-Whitney analysis indicated no significant difference across the levels of the independent variable ($p = .201$). Table 9 presents the means and standard deviations for students' posttest scores.

Table 9

Means and Standard Deviations of Treatment and Comparison Group Practice CAPT Writing Across the Disciplines Posttest Scores

Type of Program	Mean	Standard Deviation
Treatment	4.89	1.12
Comparison	4.53	1.41
Overall	4.70	1.29

Additional Analysis

The treatment group mean was higher than the comparison group when the Mann-Whitney test was run. Although the difference was not statistically significant, the treatment group showed greater improvement in scores than the comparison group. What drove this? The researcher utilized a post-hoc analysis on the individual components of the scoring rubric using a Pearson chi-square goodness-of-fit test, which uses a sample of the data to test whether a frequency distribution fits the predicted distribution (Donnelly, 2007). The percentage of participants who scored at the 0 (did not meet goal) and 1 (has met goal) levels on posttest organization for each group did differ, $\chi2$ $(1, n = 115) = 7.35, p = .007$. An analysis of the standard residual values (R) indicated that more students than expected in the treatment group scored at the 1.0 level for *organization* of writing, compared with students in the comparison group ($R = 2.7$).

For each scoring variable on the posttest (taking a position, support, comprehensiveness, organization, clarity and fluency, and bonus) separate two-way contingency analyses were performed to determine whether the scores of the variable (0,1) were significantly related to

Type of Program with two levels (Treatment and Comparison) (Green & Salkind, 2008). Each

chi-square was tested at the Bonferroni-adjusted alpha level of .01 (.05/5 analyses); therefore,

each chi-square was compared against the critical chi-square value ($df = 1$) of 6.635. The results

of these separate chi-square analyses are presented in Tables 10-15 below.

Table 10

Results for Two-Way Contingency Analysis for the Posttest Taking a Position

Comparison	Observed	Expected	Pearson Chi-square	Standard Residual Values
Comparison - 0	2.00	2.16	0.02	-0.159
Comparison - 1	60.00	59.84	0.00	0.159
Treatment – 0	2.00	1.84	0.01	0.159
Treatment - 1	51.00	51.16	0.00	-0.159
			0.03	

Table 11

Results for Two-Way Contingency Analysis for the Posttest Variable Support

Comparison	Observed	Expected	Pearson Chi-square	Standard Residual Values
Comparison - 0	5.00	4.85	0.00	0.103
Comparison - 1	57.00	57.15	0.00	-0.103
Treatment – 0	4.00	4.15	0.01	-0.103
Treatment - 1	49.00	48.85	0.00	0.103
			0.01	

Table 12

Results for Two-Way Contingency Analysis for the Posttest Variable Comprehensiveness

Comparison	Observed	Expected	Pearson Chi-square	Standard Residual Values
Comparison - 0	24.00	22.10	0.16	0.74
Comparison - 1	38.00	39.90	0.09	-0.74
Treatment – 0	17.00	18.90	0.19	-0.74
Treatment - 1	36.00	34.10	0.12	0.74
			0.56	

Table 13

Results for Two-Way Contingency Analysis for the Posttest Variable Organization

Comparison	Observed	Expected	Pearson Chi-square	Standard Residual Values
Comparison - 0	8.00	4.31	3.15	2.71
Comparison - 1	54.00	57.69	0.24	-2.71
Treatment – 0	0.00	3.69	3.69	-2.71
Treatment - 1	53.00	49.31	0.28	2.71
			7.36	

Table 14

Results for Two-Way Contingency Analysis for the Posttest Variable Clarity and Fluency

Comparison	Observed	Expected	Pearson Chi-square	Standard Residual Values
Comparison - 0	20.00	16.17	0.19	1.63
Comparison - 1	42.00	45.83	0.32	-1.63
Treatment – 0	10.00	13.83	1.06	-1.63
Treatment - 1	43.00	39.17	0.37	1.63
			1.94	

Table 15

Results for Two-Way Contingency Analysis for the Posttest Variable Bonus

Comparison	Observed	Expected	Pearson Chi-square	Standard Residual Values
Comparison - 0	32.00	31.27	0.02	0.273
Comparison - 1	30.00	30.73	0.02	-0.273
Treatment – 0	26.00	26.73	0.02	-0.273
Treatment - 1	27.00	26.27	0.02	0.273
			0.08	

Results of the two-way contingency analyses indicated the two variables Organization (posttest) and Type of Program (Treatment and Comparison) were significantly related ($p < .01$). An analysis of the standard residual values indicated that in the comparison group significantly more students than expected scored at a level of 0 and significantly fewer students scored at a level of 1. Also, in the treatment group significantly fewer students that expected scored at a level of 0 and significantly more students scored at a level of 1.

Qualitative Analysis of Research Questions Two and Three

Research Question Two

The researcher conducted a focus group protocol with students and teachers on two separate occasions. Seven treatment group students who had not met goal (Level 4) on the pretest but whose scores met or exceeded goal on the posttest were selected to participate. Each focus group met in a classroom setting between 30 and 40 minutes. The focus groups were audio-recorded with prior permission granted by the teachers and the students' parents/guardians. After the focus group discussions were completed, the audio recordings were transcribed into a Microsoft Word computer file format. The researcher announced at the beginning of each focus group protocol that the participants' personal identity and the location of their school would not be identifiable in any subsequent report. The magnetic tapes and computer audio files were erased once the final research report was written.

The student (Appendix O) and teacher (Appendix P) focus group protocol transcripts were read by the researcher and coded in a method of an evidence-based theory of Process Coding (Bogdan & Bilken, 2007; Charmaz, 2002; Corbin & Strauss; 2008; Strauss & Corbin, 1998; Saldana, 2009), in which the researcher codes in cycles, collapsing until categories emerge from the data. Nine categories were generated from the data, and under these headings all of the

data were accounted for. An independent researcher with expertise in Educational Psychology was asked to verify the accuracy of the category headings and data generated from them. Subsequently, minor modifications were made to the data after discussion with the independent researcher.

The researcher met with seven 9th-grade students selected from the treatment group. These students were randomly selected from students who did not meet their writing goal (Level 4) on the CAPT interdisciplinary writing pretest but who did meet goal on the posttest. Each student was assigned a number which were used when discussing statements made by the student. They were asked to share their experiences with the Paul's Elements of Reasoning Modified Writing Graphic Organizer. Five of the students were female and two were males. All students in the treatment group were between the ages 14 and 15. For reporting purposes, each student was identified with a number between 1 and 7.

Three major themes emerged from the student focus group data. Categories emerged from first cycle coding; these categories were then collapsed into themes during second cycle coding (Saldana, 2009). Table 16 presents the four selective themes and their supporting categories, along with frequencies that students in the focus group mentioned each category.

Table 16

Student Focus Group Coded Themes

Second Cycle Theme/First Cycle Coding	Frequency
1. Students believed that the Paul's Graphic Organizer was helpful and improved their writing abilities in general.	
a. Writing ability has improved.	3
b. Found graphic organizer to be helpful in writing.	12
c. Graphic organizer more helpful in writing introduction than in essay body paragraph.	3 1
d. Organizational skills for writing improved.	12
2. Students believed that the Paul's Graphic Organizer improved the ability to take a position and construct an argument when writing persuasively.	
a. Ability to write a thesis statement has improved.	2
b. Teachers have allowed students to think more clearly with graphic organizer.	1

Table 16 (continued)

Student Focus Group Coded Themes

Second Cycle Theme/First Cycle Coding	Frequency
c. Could write reasons to support as well as oppose argument.	5
d. Allowed them to consider opposing viewpoints.	2
e. Found organizer helpful in choosing which side to support through weight of evidence.	13
f. Helped student form an opinion on the topic.	4
g. Easier to support opinion.	4
h. Improved ability to support argument.	1
i. Ability to construct and think in argument has changed due to experience with graphic organizer.	4
j. Experience with writing persuasive essays has improved ability to construct an argument.	4
k. Ability to construct a persuasive argument has improved.	4
l. Organizer helped to apply information to the essay.	4
m. Organizer helped to incorporate quotations from articles.	1
3. Students believed that the format of the Paul's Graphic Organizer should be modified.	
a. More space is needed to write within the organizer boxes.	5
b. Additional box for the writing of main ideas would be helpful.	2
c. Need additional boxes for the writing of main ideas/evidence.	1
d. Inclusion of lines within boxes is needed.	1
e. Layout of organizer may initially confuse students.	2

Student selective theme one: Using the graphic organizer improved writing abilities in general. For the first theme, students believed that using the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved their writing abilities. Student number 3 said, "My (writing) ability has improved, because when I was writing all of my ideas were right

there." Student number 6 also affirmed that his writing ability had improved by using the graphic organizer, bur for a different reason, stating, "It organized my thoughts so I can write better…so it helped me, like write a way better essay than I used to."

Students also reported they found the graphic organizer to be helpful when writing their essays. Because the students had already experienced working and writing with the organizer, the researcher asked student number 4 if he would change the graphic organizer in any way. In response to this question, student number 4 stated, "I said nothing. I thought it was really helpful." Student number 1 found the graphic organizer helpful for similar reasons, "I think it'll help anyone, like, write an essay because it helps all of us, and it just makes it easier because we have everything all right there."

Student number 7 found the organizer helpful with the mechanics of essay writing format. Specifically, student number 7 said, "I found it was helpful to me because when I wrote my introduction, it was really helpful…the organizer sort of helped me with that." [in relation to making an argument] "So, it was helpful more so in the introduction than in the body paragraphs."

Student number 6 also found the graphic organizer helpful when writing his essays. Student number 6 said: "I just thought it to be helpful, because, like, it, before like without the organizer, I like didn't really like have my thoughts all together." Going further, student 6 shared the following; "Well, my ability to construct an argument is better, because like, without the graphic organizer before I was like, not really good at writing persuasive essays."

When asked by the researcher if the graphic organizer would be helpful to students outside of their school, student number 7 shared the following:

I thought it would be helpful. Because I remember doing the gambling one (in reference

to a writing prompt that they had received) where it said teens gamble too much. And at the time, like, none of my friends gamble so I didn't really, I couldn't really connect to it or relate to it. So I really didn't have an opinion. But, when I wrote stuff down on the organizer, I kind of, like saw that one side had more pieces of evidence than the other, so it helped me form an opinion. And I just think that'll happen to a lot of kids if they don't have a topic that's relatable, like if they get a gambling one or something different that they can't really think about because it hasn't happened to them.

The findings from the data support the idea that use of the graphic organizer improved their organizational skills when writing persuasive essays. Student number 2 said,

The graphic organizer helped me to keep my ideas organized, and with the evidence it helped me to just put it all together when writing my essay. "Student number 1 affirmed the response of student number 2 for a different reason: "I think it was helpful when I wrote this, because it laid everything out, and made it easier to put the essay together.

When the researcher analyzed the data, the findings revealed the students repeatedly remarking about how the graphic organizer assisting them with organization by presenting them with a format in order to write effectively. Student number 3 remarked:

I said that my ability has improved, because when I was writing all my ideas were all right there. And, my whole essay was all planned out, the evidence and everything, to write the essay it was all right there. I could write my ideas down and add the evidence and plan out everything. Everything that I needed.

Student selective theme two: Students believed that the Paul's Graphic Organizer improved the ability to take a position and construct an argument when writing persuasively. A second emergent theme from the findings of the student focus group protocol

was students' belief that the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved their ability to take a position and construct an argument when writing persuasively. To assist students in taking a position in their persuasive writing essay, the Paul's Elements of Reasoning Modified Writing Graphic Organizer contained a writing box for the placement of a thesis statement. Student number 6 believed that their ability to write a thesis statement had improved:

> My ability to construct an argument, it's better, because like, without the graphic organizer before I was like, not really writing good persuasive essays. And, the trick is like, afterward I was able to construct a thesis statement, a persuasive essay, and it just gave me everything I needed to write a good essay.

The findings from the student focus group protocol also reported that students using Paul's Elements of Reasoning Modified Writing Graphic Organizer noticed an improvement in their ability to write reasons which supported or opposed an argument, consider opposing viewpoints, choose which side to support through weight of evidence, and form an opinion on the writing topic. Student number 3 mentioned: "I could write reasons to support the argument, as well as oppose it… Because we are always told to put… in a sentence of the other person's perspective on it." Student number 5 responded similarly:

> I thought it did really help me, because I was able to like, look at both the, what other people think, all the different options I could choose from, and my, um, idea and what other people's ideas could be so I could work them into my essay.

With respect to considering opposing viewpoints within the student's argument while writing their persuasive essay, student number 7 said:

> Yeah, I thought that it was helpful because, like when you see the other person's

argument, you can look back on to what you are trying to say and, you can find the little

ins and outs of what they are trying to say, and like make your argument stronger. And

then, it was also, when they gave us the, the readings about the different arguments in the

CAPT essay, I would try to look for the strongest for the one that I was supporting, and

then not the weakest but the ones that I could, like capitalize on the most for the opposing

ones. So, I thought that was helpful, that we were, like able to see both sides.

The students also found Paul's Elements of Reasoning Modified Writing Graphic

Organizer helpful in forming an opinion on an assigned writing topic. Student number 7

reported how the organizer was of value in forming an opinion on an assigned writing topic (in

that case, gambling) to which the student could not readily relate.

Similarly, the findings generated from the focus group reveal that students also found

the graphic organizer helpful in forming topic opinions by weighing evidence made possible by

the format of the graphic organizer. These findings are supported by the comments made by

student number 2:

> …to construct an argument on this, this really helped me, like, pick which side I was on,
>
> because it gave me, like, whichever I had more evidence for, whichever one I could go on
>
> for longer, like I would pick that one. And I would have probably picked the other one
>
> instead, which wouldn't have helped because I wouldn't have had the evidence to write
>
> about it.

Student number 5 said:

> I think it would be [helpful in forming topic opinions] because just like they were saying
>
> some topics that kids don't really know about, so they need to form an opinion and that's

what this can help them do, like I remember in middle school we were talking about

school lunches and everyone got such a great grade on it because everyone was

connected to it, and they all were, they all knew what they wanted to say and stuff like

that. So with this, it would help them form an opinion and help them talk about it.

Student number 5 reflected on how the organizer's design permitted them to record and

compare information obtained from the primary source reading materials:

…you can write both for the support; you can write that it is safer and that all things that

can go for it. And then you can write about how about privacy, and all of that stuff on

one side and so there's 2 different ones and then that way you can use it both ways, you

can use it both ways, you can pick before or you don't have to, and then you can see 'Oh

well, I'm more on this side so I'm going to use this side, but I'm going to use some pieces

from this too.'

Student selective theme three: Students believed that the Paul's Graphic Organizer

should be modified. The third theme that emerged from data revealed that students believed

that the Paul's Elements of Reasoning Modified Writing Graphic Organizer should be adjusted

to allow more space for writing, especially inside of the organizer boxes designed for specific

writing tasks. When asked by the researcher what would it be if they were able to change one

thing about the graphic organizer, student number 2 said: "I would put in more space to write,

because I really did not have enough space to write it." When asked the same question, student 4

said, "Yes. It would have helped when we were writing up and listing all of the evidence for our

arguments."

Students 5 and 6 shared similar observations. The researcher acknowledged the student's

observations and comments, while reinforcing their value and importance. In response to the

researchers' question, student 5 said, "I said that for the, for the evidence, if we could have more room for that, because I was kind of like scrunching everything in there. Because it was, yeah, that's the only thing I would change." Student 6 responded with a similar explanation, stating "Well, the only thing that I would really change about the graphic organizer would be that, I would like to have a little more space to write things out, so like I could just see my thoughts there."

Additional comments suggested the design layout and wording of the writing organizer textboxes – specifically the component that directed the user to think of possible consequences for supporting or opposing an issue - might confuse students during the writing process. Lastly, a student suggested the use of lines within each organizer textbox for writing neatness.

Research Question Three

The researcher conducted a focus group protocol in a classroom setting with the three teachers who participated in the intervention to discuss their experiences in working with the Paul's Elements of Reasoning Modified Writing Graphic Organizer. Teacher participants were relatively new to the profession, with an average of 4 years of experience. All of their teaching experience had been obtained in the participating school district. Two of the teachers were female, and one was male. For reporting purposes, each teacher was identified with a number between one and three.

Four major themes emerged from the teacher focus group data (Table 17).

Table 17

Teacher Focus Group Coded Themes

Second Cycle Theme/First Cycle Coding	Number of Codes
1. Teachers believed that the Paul's Graphic Organizer improved students' writing abilities by requiring them to think beyond the	

traditional graphic organizer supplied by the state.

a.	Saw value in using it.	2
b.	Pushed students beyond formulaic writing.	1
c.	Allowed students to understand beliefs and consequences.	8
d.	Helped students to write a thesis statement.	3
e.	Promoted student organization in their writing.	4
f.	Helped students writing.	2
g.	Made it simple for students.	1
h.	Helped students to form an opinion.	6
i.	Engaged students in the topic.	3
j.	Taught students that more effort equals more achievement.	1
k.	Challenged students.	3
l.	Believed in value of including consequences.	1
m.	Believed in value of stating a question and focusing upon an issue.	1
n.	Believed the graphic organizer was an overall good tool, but the student still has to write the essay.	1

2. Teachers believed that the Paul's Graphic Organizer improved and assisted in their daily teaching efforts.

a.	Helped with their lesson planning.	3
b.	Promoted reflection of their teaching.	2

3. Teachers believed that the Paul's Graphic Organizer should be adjusted to use in the classroom. However, they believed that revisions would be difficult to make.

a.	Students experienced difficulty applying it to historical prompts	2
b.	It would be difficult to modify it for content.	3
c.	It would be difficult to translate the rubric format into another domain.	1
d.	Revisions to improve it would make organizer too long.	2
e.	Belief columns do need adjustment.	1

Table 17 (continued)

Teacher Focus Group Coded Themes

	Number of
Second Cycle Theme/First Cycle Coding	Codes

f. Teachers struggled with teaching points of view and reinforcing evidence.	2
g. Teachers recommended adding a section for topic sentences	1
4. Teachers disagreed about how differences in student abilities affected the outcome.	
a. Some teachers believed that basic students needed reminders about beliefs and consequences – and struggled with completion.	4
b. Some teachers believed that basic students required much more guidance than advanced students on how to use the graphic organizer.	2
c. Some teachers believed that Level II did fine with Paul's organizer and that it impacted all levels of students.	2
d. Not helpful for teaching and learning.	1

Teacher selective theme one: Teachers believed that their students' persuasive writing abilities improved as a result of their exposure to the organizer. For the first theme, almost all teachers using the Paul's Elements of Reasoning Modified Writing Graphic Organizer believed that their students' persuasive writing abilities improved as a result of their exposure to the organizer. Teachers found value in using the organizer, and felt that it pushed 9th-grade students beyond formulaic writing in order to prepare them for the Interdisciplinary Writing Across The Disciplines CAPT examination administered in their sophomore year. Additionally, teachers positively viewed the beliefs and consequences section of the organizer designed by the researcher to promote critical thinking during the writing process. Teacher number 1 said:

> I think in terms of the CAPT for CAPT writing though, it did, kind of help me help them with the, beyond the formulaic writing, because this goes beyond the formulaic idea of the three paragraphs, because it includes the belief and the consequences that they [referring to the traditional organizer provided by the Connecticut State Department of education] don't otherwise include in the formula.

Teacher number 2 discussed how he found Paul's Elements of Reasoning Modified Writing Graphic Organizer of value in the teaching of writing for the CAPT with students, which he credited for helping students brainstorm writing ideas. Teacher number 2 stated that the organizer assisted in reflecting upon his teaching:

I would have to agree with teacher number 1 that the organizer certainly helps with CAPT writing, I said, you know, in thinking about this question that the piece, the component that reversed the consequences, is something that I may have used, in the future I may have used, I may use more directly but indirectly I was, I would, based on the fact that you had it on this organizer, I would try and use that kind of idea in brainstorming: 'OK, well, why would I support the side, or what does it mean to support this side?' So, that definitely helped me in my own reflection of how I teach writing. And, the belief part as well, what is a belief that makes us support or, opposed this issue or problem.

With regard to the beliefs and critical thinking component, teacher number 3 stated:

You have to come up with facts, quotations, you know, that the consequences really have the students weigh in on the issues of both sides, not just one, but both sides, so overall I think, I don't think there's too much more you can do in terms of preparing to write, I mean I don't really know what else can be added to it. I think it helps.

In addition to these benefits, the teachers also discussed how the use of Paul's Elements of Reasoning Modified Writing Graphic Organizer helped to promote student writing organization skills as well as assist them in forming an opinion with regard to the writing topic. Teacher number 3 said: "I thought it, it organized ideas to help them think for themselves. You know, make their own decision." Teacher number 1 agreed with teacher number 3, and stated:

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I think that this organizer would greatly help students to form an opinion compared with to what is already on the CAPT, because what is already on the CAPT assumes that you've developed a position already. This has them weighing both sides. Whereas, you know, it's, when they go to fill out the CAPT one [in reference to the traditional CAPT writing organizer] they make a list of reasons and then just base it on how many reasons they have, this actually gets them into the conversation, so this is much more beneficial to a student. In terms of the students that have trouble connecting with the topic, this is something that could really, I think it really helps them because in this sense there asked an opinion, not so much, 'OK, go locate me three arguments for both opinions.' So this is much more beneficial to engaging the students in their own writing.

Teachers also noted that they found the Paul's Elements of Reasoning Modified Writing Graphic Organizer to challenge students more in their thinking and writing. In noting this, teacher number 3 said: "I like the way this challenges students, a little bit more than the (traditional) CAPT organizer. It makes them think a little deeper, you know, it requires more."

Teacher selective theme two: Teacher's believed that the Paul's Graphic Organizer improved and assisted in their daily teaching efforts. During the focus group protocol, teachers discussed how they believed the writing organizer assisted them with daily lesson planning, as well as with promoting self-reflection about their own teaching practices. Teacher number 3 affirmed these observations by stating: "I definitely learned more in terms of preparation and organizing of ideas, not so much the actual writing, but in terms of planning, absolutely. The graphic organizer helped, big-time." With respect to his teaching practices, teacher number 3 continued, "…I would say that it's a combination of things that we already have in place, and also how this [organizer] influenced my own actions in the classroom…"

Teacher number 1 implied the same when she said, " I think that the organizer has helped me guide my students on the CAPT writing in terms of the persuasive writing that the CAPT writing is looking for on a current issue, a modern issue, taking a yes or no position…"

Teacher selective theme three: Teachers believed that the Paul's Graphic Organizer had to be adjusted to use in the classroom. However, they believed that revisions would be difficult to make. During the focus group protocol, the teachers suggested several writing organizer adjustments to the researcher. The teachers believed they found difficulty in adjusting the organizer to accommodate historical topics traditionally covered in their World History I curriculum, in comparison to the contemporary topic questions that are commonly asked by the practice CAPT Writing Across the Disciplines assessments.

In relation to this observation, teacher number 1 said:

> …a challenge that I had was that it [Paul's Elements of Reasoning Modified Writing Graphic Organizer] wasn't as applicable to the historical writing that we do that students must do during the semester… we're practicing persuasive writing using historical document based questions, so we would, what we have to do was adjust it, well not adjust but rather translate it in order to fit the specific topics. So instead of a yes or no side it would, it had to, adjust to …oh yes, Athens or Sparta. So, we had to kind of make it fit more with our historical writing.

> Teacher number 3 shared a similar observation when he said, "The one thing that I would say is that a lot of times with certain historical essays it is harder to use the consequences for supporting a position in that column."

The focus group teachers also stated they sometimes struggled with the Points of View and Reinforcing Evidence sections of the organizer, and suggested that the Beliefs That Make Us

Support/Oppose component be adjusted as well. Among these adjustments it was posited that the organizer include an additional section for topic sentences. In light of these observations, teacher number 1 stated:

> …what I hover around are the points of view on the issue or problem and the reinforcing evidence. I think it's important to have them here, I just, I think I struggled a bit when I was first, you know using it and in teaching students how to use it in terms of translating that into a five-paragraph essay.

The researcher found teacher number 3 in agreement with teacher number 1. Teacher number 1 said:

> I thought that the part that says a belief that makes us support or oppose this issue or problem, and the part that says consequences for supporting or opposing this position, the language would maybe need to be changed, the students were very - were confused by that initially.

In light of these comments teacher number 1 suggested an improvement to the Paul's Elements of Reasoning Modified Writing Graphic Organizer, while recognizing that additional modifications may actually take time away from the students' essay writing task by stating:

> …other than that, I really just said maybe that you can add a section where you can put topic sentences. But I mean, you don't want to get too crazy, because they still have to write your essay, so, I really think overall that it's just a good helper.

Teacher selective theme four: Teachers disagreed about how differences in student abilities affected the outcome. Treatment group teachers taught 9th-grade World History I students across three ability levels: Academic, College Preparatory, and Honors. During the focus group protocol, the researcher discovered that teachers disagreed over differences in

student abilities affecting the outcome of their work with Paul's Elements of Reasoning Modified Writing Graphic Organizer. For example, teachers discussed students possessing basic skills within their Academic or College Preparatory level classes; they mentioned that these students needed be reminded about how to complete the *Beliefs* and *Consequences* section more frequently than Honors students and generally struggled to complete the organizer before writing their persuasive essays. In relation to these issues, teacher number 2 said:

> I thought that the part that says a belief that makes us support or oppose this issue or problem, and the part that says consequences for supporting or opposing this position, the language would maybe need to be changed, the students were very - were confused by that initially. And, as we worked on it, there were still some that really didn't understand what was expected of them, a lot of the high-performing students understood it, but some of the others really needed that constant reminder of, 'Okay, well what is belief? Okay, so I have to think, like conceptual, or impact, or what the consequence is, what would be the impact if I say or if I argued this, what would that mean, what would that mean for society?'

In conjunction with teacher number 2's comments, teacher number 3 said: " … it's the belief part can be very confusing to [all] the students." In relation to student academic levels and their ability to work with and complete Paul's Elements of Reasoning Modified Writing Graphic Organizer, teacher number 1 stated that she observed the following:

> I had two treatment classes. One was an Honors class and the other a College Preparatory class. The Honors were more willing to take the time to understand what it was asking in the organizer; the College Preparatory, many of them just wanted to know what they needed to do and get it done rather than really sit there and think about what

this was really asking them. So, their experiences were a little different and I think based

on something intrinsic at that time.

Contrary to the experience of teacher number 1 had working with her College Preparatory

learners, teacher number 3 discussed that there was little noticeable difficulty for his College

Preparatory (Level II) students when working with the organizer. Teacher number 3 said:

> The Level Twos seem to do fine with it, some better than others. The ability ranges are
>
> quite substantial in those classes as well, but I think the students that put the most effort
>
> in got a lot out of it… but some of the kids in the lower level did very well with it, so, it
>
> did impact all levels.

Triangulation of Quantitative and Qualitative Findings

O'Donoghue and Punch (2003) have defined triangulation as "a method of cross-checking

data from multiple sources to search for regularities in the research data" (p.78). The researcher

conducted triangulation of the quantitative and qualitative data in an attempt to overcome any

possible weaknesses or biases derived from a single research method or theory. Results of the

triangulation effort are presented in Table 18.

Table 18

Summary of Triangulation of Quantitative and Qualitative Results

Quantitative Results	Qualitative Themes that Support the Quantitative Results	Qualitative Themes that Do Not Support the Quantitative Results

Research Question One Posttest persuasive writing scores were not significantly different for students who used the graphic organizer and students who did not.	Students believed…	Students believed…
	Paul's Graphic Organizer should be adjusted to allow more space to write.	Paul's Graphic Organizer improved their persuasive writing abilities.
		Paul's Graphic Organizer improved their organization skills when writing persuasive essays.
		Paul's Graphic Organizer improved their ability to take a position and construct an argument when writing persuasively.
	Paul's Graphic Organizer had to be adjusted to use in their classroom. However, students also believed that revisions would be difficult to make.	Paul's Graphic Organizer improved student's writing abilities by requiring them to think beyond the normal state organizer.
		Paul's Graphic Organizer improved and assisted in their daily teaching efforts
	Teachers disagreed about how differences in student abilities affected the outcome.	

A quantitative analysis of research question one revealed posttest persuasive writing scores were not significantly different for students who used Paul's Elements of Reasoning Modified Writing Graphic Organize than students who did not. Running counter to this finding, qualitative data analysis revealed that students generally believed that the Paul's Elements of

Reasoning Modified Writing Graphic Organizer was helpful in enabling them to become better writers and better writers of persuasive essays. However, students believed that the organizer should be modified to allow more space for them to write. Teachers also believed the critical thinking graphic organizer needed adjustment in the classroom, in relation to historical topics in order for the students to comprehend the aim of the organizer. For example, the teachers explained that students experienced difficulty with the sections of the organizer that required higher order or critical thinking skills, i.e., on the section that requires students to state a belief that makes the writer support the stance on the issue or problem. Teachers also suggested that students experienced difficulties when developing consequences for supporting their positions, applied to historic rather than a contemporary topics, and believed that the adjustments required to tailor he organizer to historical topics would be difficult to make without altering the design or intended purpose of the organizer. Finally, the teachers also disagreed over differences in student academic ability in relation to the outcomes of their persuasive writing scores. Two of the three teachers believed that students enrolled in College Preparatory or Academic level classes struggled with the organizer, while the third teacher did not

Contrary to these findings, additional student qualitative analysis suggests that the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved student writing capabilities by improving their organizational skills and assisting them in taking a position and constructing a persuasive argument. Additionally, almost all of the teachers believed that the writing organizer improved their students' writing abilities by requiring them to think beyond the boundaries of the standard state writing organizer. Lastly, the teachers also suggested that their daily teaching efforts improved and were assisted through the use of Paul's Elements of

Reasoning Modified Writing Graphic Organizer with regard to the planning and instructional

delivery of lessons in relation to the CAPT.

CHAPTER FIVE: SUMMARY OF FINDINGS AND CONCLUSIONS

The current research emphasized developing the ability of students to write persuasive essays through the use of teacher instruction, guided practice, and students' use of a critical thinking writing graphic organizer in a high school classroom. A review of the theoretical literature and research in chapter two suggests the importance of persuasive writing and critical thinking as an academic necessity and lifelong skill. Additionally, research in chapter two supports the use of graphic organizers within the classroom as an anchoring instrument in order to assist students in linking and applying previously held knowledge in relation to topics that may be unfamiliar to them. Graphic organizers may benefit students regardless of their learning abilities, and may also serve to assist teachers when providing instruction on writing procedures and processes.

This chapter consists of five sections: (a) a summary of the study which includes a review of the findings as they relate to the research questions and hypotheses, (b) a comparison of findings related to the studies described in the review of the literature, (c) limitations that may have impacted the current research study, (d) implications to educators, (e) and suggestions for future research.

Summary of the Study

The purpose of this study was to establish if the use of Paul's Elements of Reasoning Modified Writing Graphic Organizer improved the persuasive writing skills of grade nine World History I students. A sample of convenience consisting of 123 ninth-grade students from 10 classrooms enrolled in three levels of a full-year freshman World History I course who participated in this study. Students were randomly assigned by classroom into treatment and

comparison groups within the program of studies and school in which they were currently enrolled.

Research Questions

Using a methodical approach, this researcher addressed the following questions:

1. Is there a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th grade students who participate for 12 weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and those who do not? Non-Directional Hypothesis: There will be a significant difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th grade students who participated for 12 weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and those who did not.

2. How do 9th-grade students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing pretest, but who did meet goal on the posttest, view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

3. How do teachers in the treatment condition view their experiences with Paul's Elements of Reasoning Modified Writing Graphic Organizer?

Procedures

This study utilized a quasi-experimental randomized treatment and comparison group pretest-posttest design for quantitative research question one. A general qualitative research example was used for research questions two and three (Saldana, 2009). Additionally, mixed

methods were utilized to triangulate the quantitative with qualitative data. An Explanatory Model (Creswell & Plano-Clark, 2007) was used to collect data separately and sequentially to compare results so as to corroborate quantitative and qualitative findings (Creswell & Plano-Clark, 2007). Quantitative data were collected through the use of the CAPT Grading Rubric (Modified) (Appendix A) pre- and posttest student persuasive essay writing scores. Qualitative data were collected using a teacher demographic information form; a student demographic information form, a researcher-designed student focus group protocol, a researcher-designed teacher focus group protocol, and a teacher log for both comparison and treatment groups.

Students in this study ($n = 123$) were enrolled in 10 intact classrooms randomly assigned by the researcher to treatment ($n = 55$) or comparison ($n = 68$) groups. All 9th grade student participants attended the same high school and were taught using the same district social studies curriculum that addressed the same standards. Students in the treatment group ($n = 55$) were taught to apply critical thinking and persuasive writing strategies using the Paul's Elements of Reasoning Modified Writing Graphic Organizer, in addition to receiving specific written teacher feedback on their practice CAPT Writing Across the Disciplines essays. Students in the comparison group ($n = 68$) were taught to apply persuasive writing strategies using the standard state writing organizer, in addition to receiving specific written teacher feedback on their practice CAPT essays.

Research Question One

For research question one, this researcher sought to quantitatively measure the effect of a critical thinking writing graphic organizer upon 9th grade World History I students' persuasive writing abilities using a randomized treatment and comparison, pretest-posttest design that

compared two groups; (a) students that used a critical thinking graphic organizer; and (b) students that used the standard state writing organizer.

Data were collected by scoring students' practice CAPT Writing Across the Disciplines practice assessments using a modified format of the CAPT grading rubric. The independent categorical variable was Type of Writing Program with two levels: (a) treatment group with the use of Paul's Elements of Reasoning Modified Writing Graphic Organizer, and (b) comparison group with the use of a standard state writing organizer. A Shapiro-Wilks test performed on posttest data indicated that the data differed significantly from the normal distribution (p < .001). Because the data were not normally distributed, a non-parametric Mann-Whitney test was performed on the posttest data to determine if there was significant difference in the posttest scores across the groups after the intervention. Results of the Mann-Whitney posttest analysis also indicated no significant difference ($p = .201$) between students in the treatment ($n = 54$, $M = 4.89$, $SD = 1.12$) and comparison ($n = 63$, $M = 4.53$, $SD = 1.41$) levels of the independent variable.

Research Question Two

For research question two, a student focus group was conducted with students that shared their experiences working with Paul's Elements of Reasoning Modified Writing Graphic Organizer. Cycle coding (Saldana, 2009) was applied to detect categories and themes within the data. The final themes revealed that students who had worked with the organizer believed that it had improved their persuasive writing skills and found it to be valuable when formulating the introductory paragraphs of their essays. The students also suggested that the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved their organizational skills when

writing their persuasive essays, especially when organizing their ideas prior to the actual writing process.

Additionally, students found the organizer helpful when they were required to take a position on an issue, and subsequently support their position by constructing a reinforcing argument. The students believed that their teachers had allowed them to think more clearly through their introduction and use of the organizer, and that it permitted them to strengthen their essay's position by considering and incorporating opposing arguments. Lastly, some students found the graphic design of the organizer had limitations. These students believed that the Paul's Elements of Reasoning Modified Writing Graphic Organizer did not provide them with enough writing space to record their notes from the primary and secondary source documents that accompanied the writing prompt question.

Research Question Three

For research question three, the researcher conducted teacher focus group protocol with teachers that shared their experiences working with Paul's Elements of Reasoning Modified Writing Graphic Organizer. Once again, cycle coding (Saldana, 2009) was applied to detect categories and themes within the data. Further examination of the data revealed relationships between patterns and similarities resulting in the creation of discriminating themes. The themes revealed that teachers believed the Paul's Elements of Reasoning Modified Graphic Organizer improved students' writing abilities by requiring them to think beyond the normal state organizer. Although the organizer was viewed as helpful, the teachers noted that the students still had to possess the skills to compose the essays themselves.

Teachers also believed the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved and assisted in their daily teaching efforts, and that the organizer assisted

with their daily lesson planning and promoted reflection upon their teaching practice in relation to preparing their students for the CAPT. However, two teachers affirmed that they experienced difficulty in adjusting the organizer to fit historical themes and topics. Lastly, one teacher disagreed about how differences in student abilities affected the outcome of their practice CAPT writing scores, despite working with an organizer designed to promote critical thinking and improve persuasive writing. Some teachers believed that an increased level of remedial assistance and guidance was required for students other than those who were academically advanced, while other teachers believed the Paul's Elements of Reasoning Modified Writing Graphic Organizer had a positive impact upon all students regardless of their abilities.

Comparison and Contrast of Findings

The reviews of the literature presented in Chapter Two suggest that critical thinking research is not a conceptual innovation of contemporary education scholars and researchers such as Paul and Elder (2008). To the contrary, the importance of critical thinking research has longstanding historical influence upon education stemming from the work of Dewey (1903), Glaser (1941) and Ennis (1962). Despite their impact upon education research, instructional designs and program implementation, existing research has revealed that many contemporary educators have failed to comprehend the significance and implications of critical thinking in theory as well as practice (Paul, 1997). A current review of the Connecticut State Department of Education CAPT preparatory writing materials (2010 b) provided to students does not promote critical thinking or writing, along with an examination of additional state persuasive writing programs that provide examples of critical thinking within previously released student writing samples rated at or above goal.

This research study investigated whether an interventional graphic organizer designed to promote students' critical thinking skills would have a positive impact upon student practice CAPT Writing Across the Disciplines persuasive essay scores. Not supporting the findings of previous research (Ausubel & Fitzgerald, 1961; Ausubel & Fitzgerald, 1962; Ausubel, 1963) there was no significant statistical difference in the mean practice Connecticut Academic Performance Test (CAPT) Interdisciplinary Writing scores between 9th-grade students who participated for twelve weeks in a critical thinking intervention using Paul's Elements of Reasoning Modified Writing Graphic Organizer and students who used the traditional organizer. Supporting the current findings in the research study, Moore and Readance (1984) found that graphic organizers utilized by students before or simultaneous to the task had the least effect upon learning, while those presented after the task had the greatest effect. Conversely, Butchart et al. (2009) determined that students who were taught using argument mapping (graphic organizer) exercises with automated feedback achieved more content knowledge than students taught by other critical thinking methods.

Moore and Readance (1984) also examined the impact of using graphic organizers on vocabulary and reading comprehension, and found an overall larger effect size when comparing university students to secondary- and elementary-school students. Moore and Readance (1984) concluded that a learner's maturity might enhance the effectiveness of using graphic organizers, a result that may have bearing on the current study's findings.

For question two, a majority of qualitiative responses that focused upon 9th grade treatment group students who did not meet goal (Level 4) on the CAPT Interdisciplinary Writing pretest but who subsequently met goal on the posttest viewed their experience with Paul's Elements of Reasoning Modified Writing Graphic Organizer as positive. Many of the students

believed that their ability to think critically and write persuasively had improved. This study

adds to previous research by Scanlan's (2006) introduction and use of a Paul and Elder's based

critical thinking training program. Student composition improved dramatically in the five key

areas related to rhetorical composition, and among all of the learning ability groups. Although

Scanlan's research did not employ the use of a graphic organizer, the recognition of critical

thinking as a component of successful student writing may provide positive results for subjects

participating in future research studies.

Students also reported the Paul's Elements of Reasoning Modified Writing Graphic

Organizer permitted them to think more clearly and promoted organization in their writing, thus

providing them with a sense of satisfaction that the organizer had moved their writing

capabilities to a higher level. These student observations are relevant to Csikszentmihalyi's

(1993) *flow,* that is, a person's involvement within a task or activity (in this case, writing) that

produces feelings of satisfaction. In summary, writers who are properly challenged may come to

view their task as more than a rote or mechanical exercise (Davis, 2004). Eberly & Trand (2010)

also observed that students respond positively when offered organizers to improve their critical

thinking and writing skills as they worked to incorporate critical thinking into the writing skills

of freshman students at a large urban public university in the southeastern United States.

Quite frequently, student participants noted how the organizer helped them to place

information and supportive details in a logical, sequential manner that strengthened their

arguments and overall writing. These student comments support Ausubel's (1960)

observations that graphic organizers presented to students in advance facilitated learning by

enhancing new information gleaned from the use of graphic organizers and by providing what

Ausubel (1960) identified as *optimal anchorage,* or the referential incorporation of knowledge

that could possibly be overlooked or omitted by the learner. In summary, student feedback on the Paul and Elder's graphic organizer was positive, with the exception of the organizer's format, which most students believed should be expanded to provide more space to record information.

For question three, teachers in the treatment condition shared mixed experiences in working with the Paul's Elements of Reasoning Modified Writing Graphic Organizer. Two teachers believed that the organizer improved their student's writing abilities by requiring them to think beyond the normal state organizer. These teachers agreed that critical thinking was a vital component of persuasive writing skills, and to a varying degree made conscious efforts to incorporate critical thinking in their lesson planning and instructional delivery despite the training and instructional practices associated with the treatment group. Their views are similar to those of Scanlan (2006) and Paul (2000), who both regard critical thinking as an integral skill component of persuasive writing.

Three teachers also believed that the use of Paul's Elements of Reasoning Modified Writing Graphic Organizer in their classrooms had a positive effect upon their student's writing with respect to organization skills. Teachers reported that the organizer had a positive effect on their daily lesson planning by helping them to become better organized and by providing them with a venue for reflection on best practices in instructional delivery. Previous research (Moore & Readance, 1984) has supported this finding, as teachers who used graphic organizers as a part of their lesson planning and instructional practices have reported that they had a tendency to feel "more confident and competent while leading students through sections of the content." (p. 14). Moore and Readance (1984) also reported that teachers who worked with graphic organizers stated that they experienced levels of increased organization, better control of learning activities,

clearer recognition of learning goals, and greater sensitivity toward the requirements of the learning task.

One teacher was dubious of the practicality of using Paul's Elements of Reasoning Modified Writing Graphic Organizer in their daily instructional processes, as well as using the organizer for the various historical topics and themes in their curriculum. Their observation was supported within the literature by the meta-analytical research of Moore and Readance (1984), who cautioned that common pitfalls of using graphic organizers exist, especially at the secondary level. Such pitfalls include the difficulty of adapting organizers to subject matter and the batch processing of students; that is, the indiscriminate use of organizers in lieu of utilizing other student writing interventions. Cusick (1973) warned that graphic organizers may cause activities to become overly routinized through heavy usage. Lastly, Moore and Readance (1984) stated that graphic organizers "might not be feasible at the secondary school level where each day teachers have several course preparations and meet large groups of students in consecutive, relatively brief classroom periods" (p. 16).

Reflecting upon Ausubel's (1960) research, West, Farmer, & Wolff (1991) observed that graphic organizers were effective only when the learner's prior knowledge was known and the organizer was used to "bridge the chasm between the known and unknown." (p.115). In relation to West's observation, the teachers in this research study disagreed on differences in student abilities that affected the outcome of their experiences in working with Paul's Elements of Reasoning Modified Writing Graphic Organizer. Two of the teachers believed that students other than those at the advanced level required more guidance using the organizer. Because the organizer requires students to operate at a higher level of cognition, the gap between the known and unknown may have been too great for some students.

Implications for Educators

This research study provided mixed support for the implementation and use of Paul's

Elements of Reasoning Modified Writing Graphic Organizer to develop 9th-grade World History

I student persuasive writing skills on practice CAPT Writing Across the Disciplines essay scores.

The major findings and implications for educators are found in Table 19 and are discussed

below.

Table 19

Major Findings and Implications for Educators

Finding	Implications
1. Quantitative: Students' posttest persuasive writing scores were not significantly different for students who used the graphic organizer and students who did not.	1. Further research may be warranted by curriculum writers in examining writing programs designed to promote critical thinking (Paul, 2000).
2. Qualitative: Students believed that the Paul's Graphic Organizer improved their organization skills when writing persuasive essays.	2. Graphic organizers may be used to promote scaffolding and writing sequence methods for students for argument development and to strengthen student organization.
3. Qualitative: Students believed that the Paul's Graphic Organizer improved their ability to take a position and construct an argument when writing persuasively.	3. Students may use graphic organizers to promote interest on contemporary and historical issues while simultaneously promoting critical thinking and research skills.
4. Qualitative: Students believed that the Paul's Graphic Organizer should be adjusted to allow more space to write.	4. Alter organizer to fit on legal size paper instead of traditional letter size paper to address formatting/writing space issues.
5. Qualitative: Teachers believed that their students' persuasive writing abilities improved as a result of their exposure to the organizer.	5. Provide teachers consistent professional development for the practical implementation of graphic organizers within the instructional setting.

Table 19 (continued)

Major Findings and Implications for Educators

Finding	Implications
6. Qualitative: Students believed that the Paul's Graphic Organizer should be adjusted to allow more space to write.	6. Alter organizer to fit on legal size paper instead of traditional letter size paper to address formatting/writing space issues.
7. Qualitative: Teachers believed that their students' persuasive writing abilities improved as a result of their exposure to the organizer.	7. Provide teachers consistent professional development for the practical implementation of graphic organizers within the instructional setting.
8. Qualitative: Teachers believed that the Paul's Graphic Organizer improved and assisted in their daily teaching efforts.	8. Provide teachers with professional development and training on effective and temperate uses of graphic organizers aligned with curricular and lesson objectives.
9. Qualitative: Teachers believed that the Paul's Graphic Organizer had to be adjusted to use in the classroom. However, they believed that revisions would be difficult to make.	9. Encourage teachers to research and create primary and secondary source materials in order to permit the organizer to work effectively with select themes.
10. Qualitative: Teachers disagreed about how differences in student abilities affected the outcome.	10. Permit teachers to work with writing graphic organizers as a single method of student writing instruction across all ability levels.

The quantitative results of the current research study established that practice CAPT Writing Across the Disciplines essay scores of 9th-grade students participating for 12 weeks in a writing intervention program using Paul's Elements of Reasoning Modified Writing Graphic Organizer were not significantly different than those students using the regular state organizer. Although the difference was not statistically significant, the treatment group showed greater improvement in scores than the comparison group. A qualitative analysis of the focus group

protocols provided further insight into the research study. Reinforcing the outcome of the post-hoc analysis of the scoring rubrics' organizational component, students that worked with the Paul's Elements of Reasoning Modified Writing Graphic Organizer believed that their organizational skills had improved when preparing to write their persuasive essays. Students who struggle with the fundamental mechanics of essay writing may find the organizer helpful for planning purposes prior to writing their essay, and teachers may use the organizer as an anchoring device (Ausubel, 1960) while instructing students through the main components of the writing process, i.e., thesis statement, main body of evidence, and conclusionary paragraph.

Students also believed that using Paul's Elements of Reasoning Modified Writing Graphic Organizer improved their ability to take a position on a topic and construct an argument when writing persuasively. Students participating in the research study noted that the organizer was helpful in taking a position on a topic that was of little interest to them. Additionally, they reported that the organizer helped them to build their argument by providing the supporting and opposing points of view sections, as well as reinforcing the evidence, beliefs, and consequences sections. The ability to write clearly and persuasively on a given topic is not only significant for the CAPT, but also recognized as an important life skill (Crowhurst, 1990). Teachers may also find the organizer helpful by instructing students to complete them during the examination and subsequent classroom discussion of primary and secondary source materials prior to the writing process.

Several students who worked with Paul's Elements of Reasoning Modified Writing Graphic Organizer reported that it should be modified or adjusted in order to provide the user increased writing space. The organizers used by students in the research study were printed on standard letter sized paper. This modification could be accomplished by the use of legal sized

paper, although it would possibly require the larger legal sheet to be folded in half for classroom distribution and collection.

Teachers also believed that 9th grade student persuasive writing abilities improved as a result of their working with Paul's Elements of Reasoning Modified Writing Graphic Organizer. Potentially, it would be interesting to see if social studies teachers working with students in grades 10 through 12 might also find the organizer beneficial in preparing for the actual CAPT assessment, or perhaps in an AP U.S. History, civics or current events course. With further training, teachers could use the organizer as part of their teaching repertoire across several courses offered within their department.

The teachers noted that the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved their planning and instructional delivery with regard to writing for the CAPT. The organizer could be used to assist other social studies teachers to prepare their students to write persuasively on a variety of topics. However, Moore and Readance (1984) warn of the overuse of graphic organizers with secondary level students, citing several unintended effects, namely, the interruption of classroom discipline, the lack of perceived value of organizers among students, and the loss of teacher prestige as subject matter specialists. Participating teachers mentioned none of these potential negative affects during the researcher conducted focus group protocol.

The teachers discussed how they had to adjust the organizer when working with historical topics such as the anthropological origins of Neanderthal man or the virtues of Athenian or Spartan societies. That is, they recognized how students struggled with the consequences section of the organizer in relation to such topics and directed the students to place more emphasis on the beliefs section instead. This can possibly be attributed to the proximity of the topic to the

student, as previous CAPT topical issues such as the use of an anti-aging pill and the reintroduction of wolves into national forests influenced the mechanical design of the organizer.

Lastly, the teachers disagreed over the relationship between student cognitive abilities and performance on the practice CAPT assessment. Two teachers believed that this was not an issue, and that regardless of their academic placement worked well with the Paul's Elements of Reasoning Modified Writing Graphic Organizer. One disagreed, and felt that some students placed in college preparatory classes struggled in comparison to their peers working at the honors level. These findings suggest that the methods of instruction and the level at which graphic organizers are used may influence the outcome of assessment scores (Horton, Lovitt & Bergerund, 1990). Perhaps the year-long use of critical thinking graphic organizers as the sole component of a writing program across all academic levels may provide answers these questions.

Suggestions for Future Research

Suggestions for future research are presented in Table 20 and are presented below.

Table 20

Suggestions for Future Research

Finding	Suggestions for Future Research
1. Quantitative: Students' posttest persuasive writing scores were not significantly different for students who used the graphic organizer and students who did not.	Would a longer period of implementation using the Paul and Elder's graphic organizer impact scores?
2. Qualitative: Students believed that the Paul's Graphic Organizer improved their organization skills when writing persuasive essays.	Can the use of writing graphic organizers on a regular basis improve student cognitive writing processes such as diction, syntactic and organizational patterns, and essay content?

Table 20

Suggestions for Future Research

Finding	Suggestions for Future Research
3. Qualitative: Students believed that the Paul's Graphic Organizer improved their ability to take a position and construct an argument when writing persuasively.	Can social studies curriculum that emphasizes critical thinking skills impact students' persuasive writing abilities?
4. Qualitative: Students believed that the Paul's Graphic Organizer should be adjusted to allow more space to write.	How does the overall graphic organizer design impact student learning abilities? What is the effect of design factors such as color, shading and font upon student users?
5. Qualitative: Teachers believed that their students' persuasive writing abilities improved as a result of their exposure to the organizer.	In what ways can writing graphic organizers be utilized inside and outside of the classroom in order to maximize student exposure for the improvement of their persuasive writing skills?
6. Qualitative: Teachers believed that the Paul's Graphic Organizer improved and assisted in their daily teaching efforts.	What impact do graphic organizers have upon teacher lesson planning and instructional delivery?
7. Qualitative: Teachers disagreed about how differences in student abilities affected the outcome.	Does student academic level impact their ability to use writing graphic organizers effectively?

The findings of the current research are mixed: quantitative findings suggest that critical thinking writing graphic organizers, at least as used in the current study, have no impact on students' persuasive writing skills. Qualitative findings suggest that it may have a positive impact upon instructional delivery and student learning in relation to persuasive writing. Although the quantitative data did not reveal significance between treatment and comparison group posttest writing scores, further research may be warranted to establish whether and how this particular graphic organizer may be suited to help students write persuasively.

Treatment group students who were part of the researcher focus group believed that the Paul's Elements of Reasoning Modified Writing Graphic Organizer improved their organizational skills, especially when preparing to write on a topic for which they had no prior knowledge and a limited amount of time in which to respond. Horton et al. (1990) measured the effect of using graphic organizers for three academic classifications of secondary students in content area classes; however, future researchers might attempt to measure individual student perceptions and experiences of U.S. students in working with organizers in a variety of writing formats (Lee & Tan, 2010).

Additionally, students in the treatment group reported that the Paul's Modified Writing Graphic Organizer improved their ability to take a position and construct an argument when writing persuasively (Lee & Tan, 2010). The ability to think critically and write persuasively has been recognized by contemporary scholars and business leaders as a vital personal skill necessary for success in many professional and career fields (The Met Life Survey of The American Teacher, 2010). Therefore, it is necessary for curriculum writers and schools of pre-service teachers to properly promote the ability of teachers to incorporate critical thinking as a consistent component of curriculum prior to their working with classroom learners. Future research calls for a meta-analysis of curriculum in states where mandated persuasive writing assessments are administered to students to determine if instruction in critical thinking and writing is indeed recognized or practiced.

The use of graphic organizers in a classroom setting has been used since the early 1960s (Ausubel, 1960; Ausubel & Youssef, 1963; Estes, Mills & Barron, 1969). Subsequently, graphic organizers have been formatted in numerous ways for multiple learning purposes. The students in this research study commented that the Paul's Modified Writing Graphic Organizer should be

adjusted to allow for more writing space. Although students did not state that the lack of

additional writing space served as an impediment in their use of the organizer, future research

may be conducted on effective comparative writing organizer format and design.

The current research study revealed that teachers believed that their students' persuasive

writing abilities improved as a result of their exposure to the organizer, and students shared these

perceptions. Teachers also believed that the organizer positively improved and assisted in their

daily teaching of persuasive writing. These sentiments are contrary to the concerns mentioned

through an earlier meta-analysis of 23 studies of graphic organizers (Moore & Readance, 1984).

Future research is suggested on how to capitalize upon existing or new opportunities in which

critical thinking writing graphic organizers may be used, as well as research focusing upon the

attitudes, perceptions and suggestions of classroom practitioners that utilize them.

Furthermore, teachers who participated in this research study experienced difficulty in

using Paul's Modified Writing Graphic Organizer with historical topics, largely due to the

difficulties that students had in applying the consequences component of the writing organizer.

Questions related to how to adapt the current organizer to historical topic may be the basis for

further research. Also, how could professional development and training impact an instructor's

ability to modify and adapt graphic organizers to become more flexible as ongoing changes in

instructional delivery and pedagogy dictate? Additionally, can a statistically significant outcome

be realized by a group using the critical thinking graphic organizer as a singular writing

intervention in comparison to groups that used a mix of interventions or none at all?

Finally, teachers disagreed over differences in their students' academic grouping

(academic, college preparatory, and honors) in relation to their ability to work with the organizer.

The research of Horton, Lovitt & Bergerund (1990) provides insight into this question, when

graphic organizers produced significantly higher performance results for three academic classifications of students enrolled in content area classes. However, Horton et al.'s (1990) study did not utilize graphic organizers to promote critical thinking in the persuasive writing process. Future research is needed to determine if academic placement levels impact student ability to use critical thinking writing graphic organizers effectively in relation to their ability to write persuasively.

<div align="center">**Limitations of the Study**</div>

Several internal and external threats to the validity of the research were recognized and addressed in an attempt to mitigate their impact upon the study.

Internal Validity

Internal validity is the extent to which the researcher can control extraneous variables in order to observe effects that can be attributed to the treatment variable (Gall, Gall, & Borg, 2007). Several threats related to internal validity were identified during the course of the research study and are discussed in this section: history, maturation, testing, experimental mortality, and experimental treatment diffusion.

History. History refers to a condition or event that may have occurred before or during the course of the research study influencing the posttest writing scores of students, such as instructional or academic inequality between schools or student groups (Gall, Gall, & Borg, 2007). To control for this variable, the researcher conducted the study at the same secondary school utilizing a uniform World History I curriculum. History was deemed to be a small threat. In addition, the researcher selected participating teachers' classrooms on a random basis across three student ability group levels: (a) Honors World History I (b) College Preparatory World History (c) Academic World History I.

However, during the course of the 12-week writing intervention program, two weather events disrupted the study by forcing the cancellation of school for five days, creating unexpected stress for teachers and students alike. Many of the students, teachers and their families were without basic utility services for several days beyond the normal resumption of school. These events posed a moderate threat upon the study in relation to teacher lesson planning, time allotted for instructional delivery, and student focus.

Maturation. The subjects participating in this study were 9th graders that experienced normal growth associated with the physical, mental and emotional aspects of puberty. Such changes are natural and expected and as the year progressed the students became more cognitively able as the year progressed. The researcher addressed this by having a comparison group taught at the same age and appropriateness with traditional best practices for social studies. Therefore maturation was deemed a small threat.

Pretest sensitization. Student familiarity with the format of the pretest and posttest format may have posed a threat to the study. If the pre- and posttest are similar in design, students may become test-wise and a subsequent improvement may be seen in their posttest scores simply as result of their experience with the pretest (Gall, et al., 2007). The pretest, writing interventions, and posttest all shared the same formatting characteristics requiring the student to write a persuasive letter to a specific audience, albeit on different topics. This threat was unavoidable because of the quasi-experimental design of the research study and the necessity of administering a pretest. Thus, testing was deemed a moderate threat.

Experimental mortality. Experimental mortality also posed a small threat to the study. During the 12-week period, only a small number (four treatment and six comparison group

research participants) opted out of the study, thus reducing the size of the treatment group from 55 to 53 participants and the comparison group from 68 to 63 participants.

   Treatment diffusion. Experimental treatment diffusion was a large threat to the research study due, to the fact that the same teachers taught both the treatment and comparison conditions. In order to minimize the effect of treatment group diffusion, the researcher trained and instructed the teachers to maintain treatment and comparison group instructional logs and writing materials in clearly marked separate folders. Further addressing the issue of diffusion, Gall, et. Al (2007) suggest that the treatment and comparison groups participating in the research study meet with their teachers separately, as well as interviewing some or all of the sample participants to determine if experimental treatment diffusion has occurred. With regard to the former, classroom schedules of teachers and students during the 12 week period did not permit them to meet at the same time.

External Validity

   External validity is a term that defines to what extent the results of this study can be applied to persons and scenarios beyond the current research. Chapter three discussed the demographics and strategic school profile of the research setting from which the research participants were drawn. Bracht and Glass (1968) further define these participants as the experimentally accessible population. The research participants are a representative sample of a student body that is primarily suburban, middle to upper middle class, and Caucasian. In Chapter 4, the researcher reported that there was no statistical difference between treatment and comparison group practice pretest and posttest practice CAPT Writing Across the Disciplines Posttest Scores for this population. As a result, the researcher is cognizant that these results may

not be applicable to target populations of 9th-grade from other settings, such as rural, urban, from different socioeconomic statuses, or with a more diverse population of students..

Trustworthiness

   Truth-Value. Lincoln and Guba (1985) recognized four areas of trustworthiness in qualitative research: truth-value, applicability, consistency, and neutrality. In order to establish truth value, Lincon and Guba (1985) state that the researcher must demonstrate that their findings or interpretations (also referred to as reconstructions) have become available via an inquiry that is credible to the participants of the original study. With respect to this aim, Lincoln and Guba (1985) support the use of a naturalistic approach with continuous interaction with the participants of the research. However, continuous interaction with the participation of the research study was neither possible nor necessary. Qualitative data were collected at the end of the study through two separate focus group protocols. The researcher transcribed, examined and applied cycle coding (Saldana, 2009) to the emergent patterns and similarities within the data with the assistance of an independent researcher. Lastly, the researcher consulted with an outside auditor to establish a type of truth value that Lincoln and Guba (1985) define as confirmability: the degree of neutrality or the extent to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest (Cohen & Crabtree, 2006).

   Applicability. Lincoln and Guba (1985) associate applicability with transferability, or the extent to which the findings can be applied to different conditions or respondents through the researchers' description and discussion of the study. This threat to trustworthiness was addressed by the description of the research setting, sample, design, methods and participants in chapter three.

Consistency. Lincoln and Guba (1985) define consistency in relation to the key concepts that serve the underpinnings of data reliability: stability, consistency, and predictability. Consistency refers to the ability of a research study to be replicated using similar processes of inquiry and conditions that produce analogous findings. The researcher addressed potential threats to consistency through a detailed description of the research methodology in chapter three, peer review of the data, and the establishment of an audit trail. Additionally, a code book was created and thorough records maintained to identify all axial coding, categories and themes that emerged from the qualitative data. However, the researcher acknowledges that the qualitative components of this study were unique to a particular setting and may not be applicable in other settings.

Neutrality. Neutrality is defined by Lincoln and Guba (1985) as the degree to which the findings of an inquiry are determined by the subjects and conditions of the research study, and not of the biases of the researcher. In order to preserve impartiality, the researcher conducted two separate focus group protocols during which the researcher and respondents were guided by a uniform set of questions. Subsequently, a second researcher with expertise in qualitative coding consistently examined and discussed with the researcher the emergent categories, axial codes and themes to make certain that the data outcomes were genuine and not based upon researcher prejudices.

Summary

Chapter five of this dissertation provided a synopsis of the present research study. Participants in this study used a critical thinking graphic organizer to assist them in writing persuasive essays over a 12-week period, in comparison to students that wrote persuasive essays during the same time period using a traditional graphic organizer provided by the state. Upon

conclusion of the study, quantitative and qualitative analyses of the results were conducted to study the impact of critical thinking graphic organizers upon student persuasive writing. A quantitative data analysis of pre and posttest writing scores found no significant difference between the treatment and comparison groups. A qualitative data analysis of student and teacher treatment focus group protocols revealed similar emergent themes that critical thinking writing graphic organizers had a positive impact upon students' writing and teacher lesson planning. Future research is suggested to determine if the preparatory use of student critical thinking writing graphic organizers for state mandated testing in a rural, suburban, and urban comparison of school districts have a significant effect upon student writing scores.

Prior to this research study, no empirical studies examined the impact of critical thinking graphic organizers upon persuasive writing for state mandated testing. The findings of this study were mixed: quantitative findings suggested that the use of a critical thinking writing graphic organizer had little impact on students' persuasive writing abilities; qualitative findings suggested that the organizer may benefit students as they prepare to write persuasive essays. Critical thinking and persuasive writing are life-long skills, and students should be taught the process skills necessary for their achievement. This aim was reflected in a statement from a student who participated in the writing treatment focus group protocol: "I thought it was helpful, because…before without the organizer, I didn't really have my thoughts together. So, with the organizer the points of view and the evidence it made me realize everything I need, the essentials to writing a good persuasive essay. So it helped me, write a way better essay than I used to."

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Appendix A: CAPT Grading Rubric (Modified)

CAPT Interdisciplinary Writing I & II

2 Published Nonfiction Texts Per Session
 (700-1,000-Word each article)

ı 65-Minute Sessions

ı Open-Ended Task Per Session

Category	Guiding Question
Taking a Position	Does the student take a clear position for or against the issue?
Support	Does the student support his or her position with accurate information and source materials?
Comprehensiveness	Does the student use information from both of the source materials?
Organization	Does the student organize his or her ideas logically and effectively?
Clarity and Fluency	Does the student express his or her ideas with clarity and fluency?

Category	Points	Guiding Question
Taking a Position	0-1	Does the student take a clear position for or against the issue?
Support	0-1	Does the student support his or her position with accurate information and source materials?
Comprehensiveness	0-1	Does the student use information from both of the source materials?
Organization	0-1	Does the student organize his or her ideas logically and effectively?
Clarity and Fluency	0-1	Does the student express his or her ideas with clarity and fluency?

Appendix B: Student Focus Group Protocol

Dear Student,

Thank you for working so hard these past few months on learning new ways to think critically and write persuasively. Please take a few moments to answer the following questions as fully as you can, and attach an extra sheet if needed. Your responses will remain anonymous.

1. Do you believe your ability to write persuasively has improved? If so, how and why? If not, why not?

2. Did you find using the Paul & Elder's Graphic Organizer helpful when you wrote for your practice CAPT persuasive essay?
If so, how and why? If not, why not?

3. If you were to change one thing about the graphic organizer, what would it be?

4. Has your ability to think and construct an argument changed? If so, how and why? If not, why not?

Appendix C: Teacher Focus Group Protocol

Dear Colleague,

Thank you for working so hard these past few months on teaching new ways to think critically and write persuasively. Please take a few moments to answer the following questions as fully as you can, and attach an extra sheet if needed. Your responses will remain anonymous.

1. Do you believe your ability to teach writing persuasively has improved since using

   Paul &Elder's Graphic Organizer? If so, how and why? If not, why not?

2. Do you believe your students' ability write persuasively has improved since using

   Paul &Elder's Graphic Organizer? If so, how and why? If not, why not?

3. If you were to change one thing about the graphic organizer, what would it be?

Appendix D: Teacher Demographic Form

TEACHER DEMOGRAPHIC FORM

1. **TEACHER I.D. NUMBER:**_____

2. **DATE OF BIRTH:** _____/____/____

                   month   day   year

3. **GENDER:** ____MALE ____ FEMALE

4. **RACE OR ETHNICITY (Please check all that apply)**

• American Indian or Alaska Native ___
• Asian ___
• Black or African American ___
• Native Hawaiian or Other Pacific Islander ___
• White ___
• Two or more races ___
• Hispanic of any race. ___

5. **SOCIAL STUDIES CLASS (CHECK ONE):**

   _____ **COLLEGE PREPARATORY**   _____ **HONORS**

6. **PROFESSIONAL SERVICE**

    a. **Approximately how long have you taught Social Studies? ___ 1-5 yrs. ___ 6-10 yrs.**

       ___ 11-15 yrs. ___ 16-20 yrs. ___ 21-25 yrs. ___ 26-30 yrs. ___ 30+ yrs.

    b. **Please list all types and levels of Social Studies courses that you have taught:**_____

_____
_____
_____
_____
_____
_____
_____

Appendix E: Student Demographic Form

STUDENT DEMOGRAPHIC FORM

7. STUDENT I.D. NUMBER:_____

8. DATE OF BIRTH: _____/_____/_____

                       month   day   year

9. GENDER: _____MALE _____ FEMALE

10. RACE OR ETHNICITY (Please check all that apply)

• American Indian or Alaska Native ____
• Asian ____
• Black or African American ____
• Native Hawaiian or Other Pacific Islander ____
• White ____
• Two or more races ____
• Hispanic of any race. ____

11. SOCIAL STUDIES CLASS (CHECK ONE):

   _____ **COLLEGE PREPARATORY**   _____ **HONORS**

12. EXTRACURRICULAR ACTIVITIES

   c. **Please list all *middle school* extra-curricular activities that you have participated in:**_____
_____
_____
_____
_____

Please list all *high school* extra-curricular activities that you plan to participate in:_____
_____
_____

   a. _____
_____

Appendix F:

Treatment and Comparison Teachers
Logs of Instruction

Teacher Instruction Log for **TREATMENT GROUP**: The Effects of Using a Critical Thinking Graphic Organizer to Improve Connecticut Academic Performance Test Interdisciplinary Writing Assessment Scores.

NAME OF TEACHER:_____

Date	Class Period	Minutes of Student Contact With Paul and Elders	Description of Related Instructional Activity
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Teacher Instruction Log for **COMPARISON GROUP**: The Effects of Using a Critical Thinking Graphic Organizer to Improve Connecticut Academic Performance Test Interdisciplinary Writing Assessment Scores.

NAME OF TEACHER:_____

Date	Class Period	Minutes of Student Contact With Writing Instruction	Description of Related Instructional Activity
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Appendix G: State CAPT Writing Organizer

Preparing to Write Your Letter

Arguments FOR Legislation Funding Stem Cell Research

Based on your reading of source materials and background knowledge, list below the most important arguments, or points of view, used to support funding stem cell research. Also list evidence or claims which support each argument.

Arguments – For Funding	Supporting Evidence or Claims

<u>**Preparing to Write Your Letter**</u>

Arguments AGAINST Legislation Funding Stem Cell Research

Based on your reading of source materials and background knowledge, list below the most important arguments, or points of view, used to oppose legislation funding stem cell research. Also list evidence or claims which support each argument.

Arguments – Against Funding	Supporting Evidence or Claims

Appendix H: Graphic Organizer Based on Paul and Elder's Web of Reasoning Modified

for CAPT

Issue or Problem, Phrased as a Question

Why is it important to discuss this Issue or Problem?
_____
_____

Points of View on Issue or Problem (SUPPORT)
1._____
2._____
3._____

Points of View on Issue or Problem (OPPOSE)
1._____
2._____
3._____

REINFORCING EVIDENCE (Quotations, Facts, Etc.)
1._____
2._____
3._____

REINFORCING EVIDENCE (Quotations, Facts, Etc.)
1._____
2._____
3._____

A _Belief_ That Makes Us _Support_ This Issue or Problem

A _Belief_ That Makes Us _Oppose_ This Issue or Problem

Consequences for Supporting This Position
1._____
2._____
3._____

Consequences for Opposing This Position
1._____
2._____
3._____

Thesis Statement
_____
_____

Appendix I: Paul and Elder's

Critical Thinking and Reasoning Web

Reasoning Web
based on Paul, 1992

Purpose/Goal		Point of View

Implications/Consequences	Issue/Problem	Evidence/Data

Inferences		Concepts/Ideas

	Assumptions	
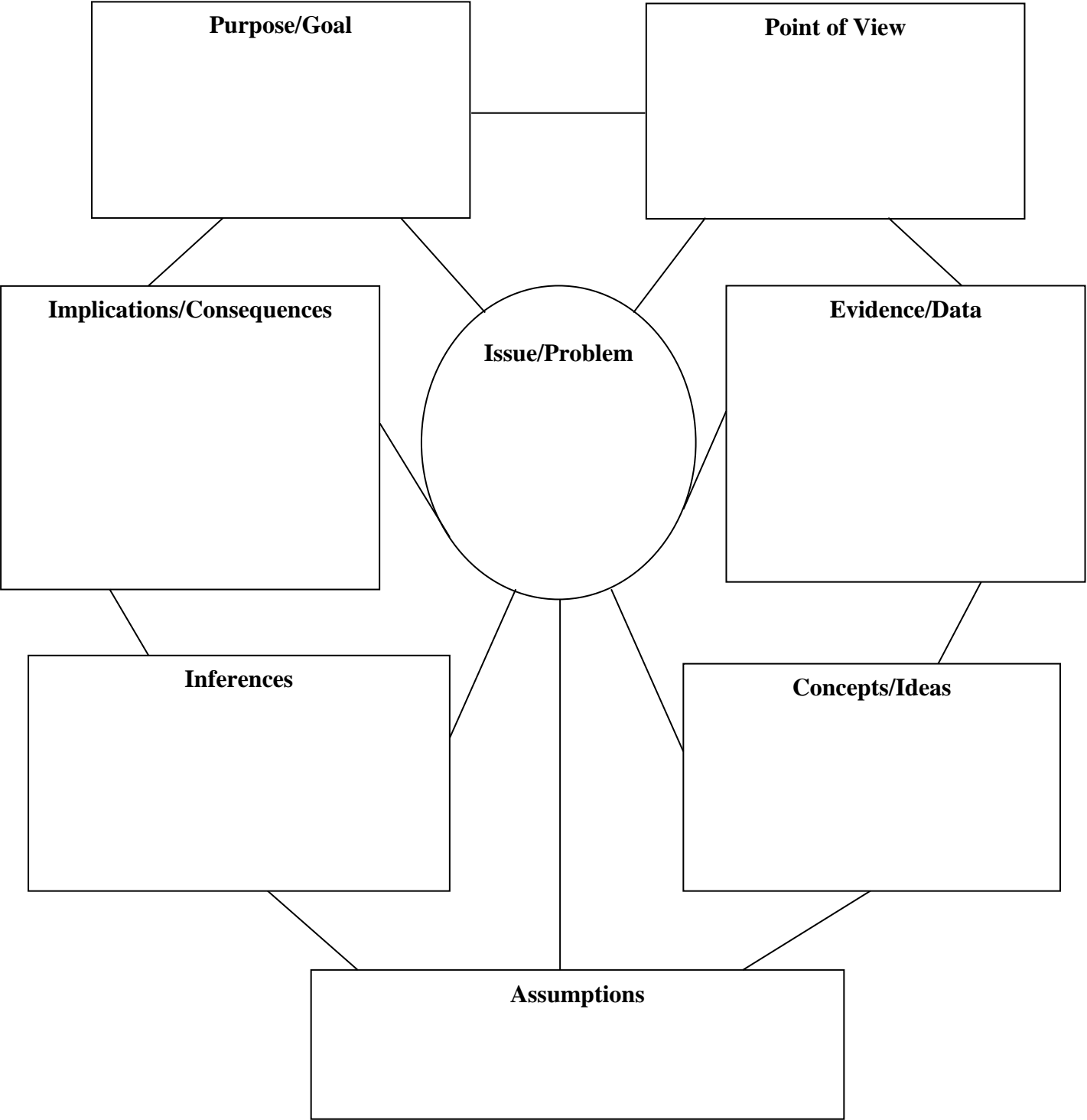
Center for Gifted Education, The College of William and Mary

Appendix J: Cover and Consent Form (Superintendent)

Patrick D. Higgins
Western Connecticut State University

[**Title**]
[**Company Name**]
[**Street Address**]
[**City, ST ZIP Code**]

Dear _____,

I am currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. This study will occur during the fall of 2011.

The purpose of this study is to determine whether a critical thinking graphic organizer may be used to improve student scores on the Interdisciplinary Writing assessment of the Connecticut Academic Performance Test (CAPT). Currently, this portion of the CAPT is a persuasive essay that requires students to take a position regarding a controversial topic, writing a thesis statement and providing support for their ideas.

Classes that participate in this study will be randomly assigned to a treatment or a comparison condition. Classes in the treatment condition will use a critical thinking graphic organizer for 12 weeks, and classes in the comparison condition will use traditional teaching methods for 12 weeks. Students will be measured through practice writing assessments twice, once at the beginning and once at the end of the 12-week period. In addition, teachers in the treatment group will complete a short survey, and five students who improved on their writing assessments will be asked to participate in a focus group. Both of these procedures will be utilized to determine how teachers and students viewed their experiences using the graphic organizer. Describe the relation of these organizers to classroom assessment.

Participation in this study is completely voluntary. The assessments are coded to ensure that all responses are confidential. Copies of the results of the study will be made available to you. Individual teacher responses will not be made available. This research study has been reviewed and approved by Western Connecticut State University's Institutional Review Board.

I wish to thank the _____school district for participating in this study and for contributing to the body of research. If you have additional questions, you may contact or may advisor at the emails below. If you wish for your district to participate in this study, please sign and return this form to me in the self-addressed stamped envelope.

Sincerely,

Patrick D. Higgins, Candidate   Nancy N. Heilbronner, Ph. D., Advisor
higgins004@connect.wcsu.edu   heilbronnern@wcsu.edu

APPROVED BY (signature) _____   DATE _____

Title:_____   District:_____

Appendix K:

Cover Letter and Consent Form (Principal)

Patrick D. Higgins
Western Connecticut State University

Dear _____,

This cover letter and the accompanying consent form are intended to encourage participation in my doctoral research study in instructional leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. This study will occur during the fall of 2011.

The purpose of this study is to determine whether a critical thinking graphic organizer may be used to improve student scores on the Interdisciplinary Writing assessment of the Connecticut Academic Performance Test (CAPT). Currently, this portion of the CAPT is a persuasive essay that requires students to take a position regarding a controversial topic, writing a thesis statement and providing support for their ideas.

Classes that participate in this study will be randomly assigned to a treatment or a comparison condition. Classes in the treatment condition will use a critical thinking graphic organizer for 12 weeks, and classes in the comparison condition will use traditional teaching methods for 12 weeks. Students will be measured through practice writing assessments twice, once at the beginning and once at the end of the 12-week period. In addition, teachers in the treatment group will complete a short survey, and five students who improved on their writing assessments will be asked to participate in a focus group. Both of these procedures will be utilized to determine how teachers and students viewed their experiences using the graphic organizer.

Participation in this study is completely voluntary. The assessments are coded to ensure that all responses are confidential. Copies of the results of the study will be made available to you. Individual teacher responses will not be made available**.** This research study has been reviewed and approved by Western Connecticut State University's Institutional Review Board.

If you have additional questions, you may contact or may advisor at the emails below. If you wish for your school to participate in this study, please sign and return this form to me in the self-addressed stamped envelope.

Thank you for your help in this most valuable research.

Sincerely,
Patrick D. Higgins, Candidate   Nancy N. Heilbronner, Ph.D., Advisor
higgins004@connect.wcsu.edu   heilbronnern@wcsu.edu

APPROVED BY (signature) _____   DATE _____

Title:_____   School:_____

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Appendix L:
Cover Letter and Consent Form (Teacher)

Patrick D. Higgins
Western Connecticut State University

Dear _____,

This cover letter and the accompanying consent form are intended to encourage participation in my doctoral research study in instructional leadership at Western Connecticut State University.
This program requires that I design and implement a dissertation research study. This study will occur during the fall of 2011.

The purpose of this study is to determine whether a critical thinking graphic organizer may be used to improve student scores on the Interdisciplinary Writing assessment of the Connecticut Academic Performance Test (CAPT). Currently, this portion of the CAPT is a persuasive essay that requires students to take a position regarding a controversial topic, writing a thesis statement and providing support for their ideas.

Classes that participate in this study will be randomly assigned to a treatment or a comparison condition. Classes in the treatment condition will use a critical thinking graphic organizer for 12 weeks, and classes in the comparison condition will use traditional teaching methods for 12 weeks. Students will be measured through practice writing assessments twice, once at the beginning and once at the end of the 12-week period. If you are in the treatment group, you will receive training on how to use the graphic organizer. If you are in the comparison group, you will be offered training at the conclusion of the study. You will be asked to have three of your classes participate. In addition, teachers in the treatment group will complete a short survey, and five students who improved on their writing assessments will be asked to participate in a focus group. Both of these procedures will be utilized to determine how teachers and students in the treatment group viewed their experiences using the graphic organizer.

Participation in this study is completely voluntary. The assessments are coded to ensure that all responses are confidential. Copies of the results of the study will be made available to you. Individual teacher responses will not be made available**. This research study has been reviewed and approved by Western Connecticut State University's Institutional Review Board.

If you have additional questions, you may contact or may advisor at the emails below. If you wish for three of your classrooms to participate in this study, please sign and return this form to me in the self-addressed stamped envelope.

Thank you for your help in this most valuable research.

Sincerely,
Patrick D. Higgins, Candidate   Nancy N. Heilbronner, Ph.D., Advisor
higgins004@connect.wcsu.edu   heilbronnern@wcsu.edu

APPROVED BY (signature) _____   DATE _____

Teacher's Name_____School:_____

Appendix M:

Cover Letter and Consent Form (Parent or Guardian)

WESTERN CONNECTICUT STATE UNIVERSITY
Parent Consent Form to Participate in a Research Study

Dear Parent or Guardian,

I am currently enrolled in the doctoral program for Instructional Leadership at Western Connecticut State University. This program requires that I design and implement a dissertation research study. This study will occur during the fall of 2011. The purpose of this study is to determine whether a critical thinking graphic organizer may be used to improve student scores on the Interdisciplinary Writing assessment of the Connecticut Academic Performance Test (CAPT). Currently, this portion of the CAPT is a persuasive essay that requires students to take a position regarding a controversial topic, writing a thesis statement and providing support for their ideas.

If you agree that your child will be in the study, he or she will take part in several writing exercises using either a traditional writing graphic organizer, or a modified graphic organizer that emphasizes critical thinking. Student names will be coded and remain confidential throughout the study. Results will be analyzed and made available only to the members of the committee.

This research study has been reviewed and approved by Western Connecticut State University's Institutional Review Board. It is hoped that the results of this study will help teachers, school administrators, and educational policy makers to better prepare students to think critically and write persuasively. Participation in this study is completely voluntary. You are free to withdraw your child from the study at any time. All information is completely confidential. If you have any questions, please contact me or my advisor at the emails or phone numbers below.

If you agree to have your child participate in this pilot study, please complete and sign the form below and return it to your child's social studies teacher.

Sincerely,
Patrick D. Higgins, Candidate   Nancy N. Heilbronner, Ph.D., Advisor
higgins004@connect.wcsu.edu   heilbronnern@wcsu.edu
(203)438-3785 extension 1220   (203) 837-8518

I, _____, the parent/legal guardian of the student minor
            (printed name of parent or guardian)

below, acknowledge that the researcher has explained to me the purpose this research study, identified any risks involved, and offered to answer any questions I may have about the nature of my child's participation. I voluntarily consent to my child's participation. I understand all information gathered during this project will be completely confidential.

Student/Minor's Name: _____
Signature of Parent or Guardian: _____
Name of Social Studies Teacher:_____

Appendix N: Student Assent Form

WESTERN CONNECTICUT STATE UNIVERSITY
Student Information Form to Participate in a Research Study

Dear Student,

My name is Mr. Higgins. I go to school at Western Connecticut State University. I am doing an exciting research study. I would like you to be a part of my study. I will send a permission slip home with you. But first, I would like you to know about my study.

The purpose of this study is to determine whether a new type of writing organizer which may help students to think critically and write more persuasively may be used to improve student scores on the Interdisciplinary Writing assessment of the Connecticut Academic Performance Test (CAPT). Currently, this portion of the CAPT is a persuasive essay that requires students to take a position regarding a controversial topic, write a thesis statement and provide support for their ideas.

If you agree to participate in this study, you will take part in several writing exercises using either a traditional writing graphic organizer, or a modified graphic organizer that emphasizes critical thinking.

When the study is over I will share the results with my research committee. I will not use your name in the study. I will use numbers instead of names. All of the information will be kept private. Your participation in this study is completely voluntary, and you are free to withdraw from the study at any time.

If you have any questions, please contact me at the email or phone number below. If you agree to participate in this research study, please print your first and last name on the line and return it to your social studies teacher. Thank you.

Sincerely,
Mr. Patrick D. Higgins, Candidate
higgins004@connect.wcsu.edu
(203)438-3785 extension 1220

X I, _____ acknowledge that the researcher (Mr. Higgins) has explained to me the purpose this research study, identified any risks involved, and offered to answer any questions I may have about the nature of my participation. I voluntarily consent to participate in this study. I understand all information gathered during this project will be completely confidential.

Appendix O: Student Focus Group Cycle Coding

Transcript	Preliminary Codes	Final Codes
Researcher: Good morning. I would like to welcome Alexis, Catherine, Julia, and Jasmine. Then first question that I have: Do you believe that your ability to write persuasively has improved? If so, how and why? If not, why not? Let's start with our questions by asking Catherine. Catherine: The graphic organizer helped me to keep my ideas organized, and with the evidence it helped me to just put it all together when writing my essay. Researcher: thank you. Let's take a look down the Question Number Two. Did you find using the Paul and Elders graphic	Helped to organize ideas when writing essay.	

organizer helpful when you wrote your practice CAPT persuasive essay? If so, how and why? If not, why not? Alexis, what did you have for Question Number Two?		
Alexis: I think it was helpful when I wrote this, because it laid everything out, and made it easier to put the essay together.	Helped to organize ideas when writing essay.	
Researcher: Very good. Going back to one Question Number One Julia, how do you feel about that?		
Julia: I said that my ability has improved, because when I was writing all my ideas were all right there. And, my whole essay was all planned out, the evidence and everything, to	Writing ability has improved. Helped to organize ideas when writing essay.	

write the essay it was all right there. Researcher: Thank you. Let's take a look at Question Number Three for just a moment. If you were to change one thing about the graphic organizer, what would it be? What would you do if you had changed his graphic organizer? Jasmine?		
Jasmine: I said nothing. I thought it was really helpful.	Graphic organizer does not need modifications. Found graphic organizer to be helpful.	
Researcher: I would like to go back for a moment to Question Number Two. I do not believe that I asked Julia that question. What		

do you think about Question Number Two?		
Julia: I found the organizer helpful, because I could write my ideas down and add the evidence and plan out everything. Everything that I needed.	Found graphic organizer to be helpful. Helped to organize ideas when writing essay.	
Researcher: Question 3: If you were to change one thing about the graphic organizer, what would it be? Catherine, what would you change?		
Catherine: I would put in more space to write, because I really did not have enough space to write it.	More space needed to write within organizer boxes. More space needed to write within organizer boxes.	
Researcher: So, you would want more space?		
Catherine: Yes.		
Researcher: And, this is		

something that I thought about when I created the organizer. Originally, I was thinking about taking what they call legal paper - this paper (holds up sheet) is what they call 8.5 x 11" paper. And the legal paper, of course, is something like 14" x 11". It is much larger, and of course this would make the organizer much larger. Did anyone else feel that way?		
Jasmine: Yes. It would have helped when we were writing up and listing all of the evidence for our arguments.	More space needed to write within organizer boxes.	
Researcher: Let's continue to look at Question Number Three. Who else would like to comment on this		

question?		
Julia: I think you should have added boxes where we could have put the main ideas down.	Additional box for the writing of main ideas.	
Researcher: Boxes, yes. So, if we could all look down for a moment at the organizer. When you are referring to boxes, where would you like to see the boxes go?		
Julia: Like, maybe like, a box, and then, um, evidence, maybe and then another box for it and then lines and stuff so you could plan out each paragraph.	Additional box for the writing of evidence.	
	Inclusion of lines within boxes.	
Researcher: Oh, I see. Very Good. Allright. Thank you. Take a look down here at Question Number Four,		

please. It reads: "Has your ability to think and construct an argument changed? If so, how and why? If not, why not?" What do you think when we are taking a look at this question; Jasmine? Jasmine: Which one? Researcher: Question Number 4. Jasmine: Um, I said yes, my ability to change... Yes, it has changed because my teachers have allowed us to think clearly and put our thoughts on paper with a graphic organizer. Researcher: Very good. Who did not get a chance to answer Question Three? Yes, Alexis. Alexis: I think that we need	Ability to construct and think in argument has changed due to experience with graphic organizer. Teachers have allowed students to think more clearly with graphic organizer.	

like, certain places for each paragraph. Like what Julia said. We need to have, like, certain, um (laughs) I don't know how to explain it. Researcher: That's all right. You are looking at the organizer, okay, and you are saying certain places for each paragraph, so maybe numbering the boxes, for example introductory paragraphs, matching up what you have or would put in for that area? Because you were working with, from what I understand, a five paragraph essay format? Students: Yes. Researcher: Yes, I know	Need additional boxes for the writing of main ideas/evidence.	

this because your teachers kept logs, or record journals while they were working with you on your practice CAPT writing. Researcher: When we go ahead and we take a look at Question Number Four, Alexis what you think about Number Four?" As your ability to think and construct an argument changed? If so, how and why? If not, why not? Alexis: My ability to construct and think in an argument has changed because I've had more experience, like, in all of my classes, we keep writing persuasive essays, and I guess that improved my, um ability.	Ability to construct and think in argument has changed due to experience with graphic organizer. Experience with writing persuasive essays has improved ability to	

Researcher: Yes, I understand that several times you practiced your persuasive writing, especially with historical topics in class. In some way, shape, or form you practice your writing. For example, I understand that sometimes you practiced "whole writes", as they call it. Julia, what do you think for Question Number Four. Julia: Um, I said yes, because I could write reasons to support the argument, as well as oppose it. Because we are always told to put a little bit of, why, like the other, like if we are supporting it, we have to put in a sentence of the other person's	construct an argument. Ability to construct a persuasive argument has improved. Could write reasons to support as well as oppose argument.	

perspective on it.		
Researcher: Do you think now, perhaps, you are thinking a bit more critically?	Awareness of other perspectives.	
Julia: Yes.		
Researcher: About things when you are going ahead constructing an argument. Very good. Catherine, what do you think for Question Number Four?	Thinking more critically when writing.	
Catherine: Um, to construct an argument on this, this really helped me, like, pick which side I was on, because it gave me, like, whichever I had more evidence for, which ever	Found organizer helpful in choosing which side to support through weight of evidence.	

one I could go on for longer, like I would pick that one. And I would have probably picked the other one instead, which wouldn't have helped because I wouldn't have had the evidence to write about it. Researcher: Did anyone else feel that way when they were sitting with the organizer? I know the topics are different, I know that, you know the things that the state puts together for you; for example one of them was putting a device in an automobile to monitor... Students in unison: Yes. Researcher: Right, that one. There were several that you were looking at, and you	Found organizer helpful in choosing which side to support through weight of evidence.	

have never seen the topic before. So, did anyone else feel the way that Catherine did? That, here we are" okay, here's the topic or the issue", but by using the organizer it helped me form an argument. Did anyone else feel that way? What do you think, Alexis? Can you describe in one of the writing exercises on how the organizer helps to formulate an argument? Alexis: Well, maybe originally, I was going to go on to the other side, but I had more evidence for the other position, so I use that one. Researcher: I see. So, you were using it based upon the evidence to build your	Found organizer helpful in choosing which side to support through weight of evidence.	

argument. There's more evidence here, so I'll go with this side. Did anyone else feel that way? Julia, did you feel that way with one of the writing prompts?		
Julia: Yes, because, like, originally I would want to pick one side, and then I would read an article and have more information for one side, so it became easier to support my opinion. Researcher: Jasmine, how about you? Did you feel that the organizer helped you to form an opinion? Jasmine: Yes, because it allowed me to see which one had more evidence.	Found organizer helpful in choosing which side to support through weight of evidence. Easier to support opinion.	

Researcher: Thank you. The evidence is what we need when we are going to try to persuade someone. Now, I put this together last year-I thought about this because I worked with the CAPT a long time. As I mentioned earlier, I taught in the classroom for 20 years, and I worked with the CAPT for 15 years. I have helped both freshmen and sophomores prepare for the CAPT. Do you think this organizer would help students across the state in other schools? Do you think it is something that could go out there and work with other students? Do you think we should look at this organizer as " well, okay	Easier to support opinion. Found organizer helpful in choosing which side to support through weight of evidence.	

fine", or it might have some worth out there with other kids? Alexis: I think it'll help anyone, like, write an essay because it helps all of us, and it just makes it easier because we have everything all right there. Researcher: Now, when you mention all right there, did anyone else get that feeling, that things were right there in front of you. Students: Yes. Researcher: And that perhaps help to write when you were there? Students: Yes. Researcher: What was one of the things that, just standing back for a minute from this, that you liked	Found graphic organizer to be helpful. Helped to organize ideas when writing essay. Helped to organize ideas when writing essay.	

about it in a summary? For example, I know back in September " okay, were looking at this", but as you begin to work with it, what what were one of the things that you said " Oh, I see this again, here's the organizer"; what were one of the things that you became used to and kind of liked about it perhaps, when you were going to write, no matter what the topic. Julia: I liked being able to put all of the quotations down, because we always have to incorporate quotations from the articles that you read into our writing, so I like that about it. Researcher: Thank you,	Organizer helped to incorporate quotations from articles.	

Julia. What do you think, Alexis were one of the take away things to sum up that you liked about the organizer? Julia: I don't know, I kind of liked all of it because it all helped. Researcher: Very well. Catherine? Catherine: I don't know, um (laughs) it all kind of came together and help me write the whole essay so it was just helpful all around. There wasn't really anything I just, I don't know... Researcher: Thank you. And, what do you think, Jasmine as a summary piece to our discussion today on the organizer? Jasmine: I think it really	Found organizer to be helpful overall. Found organizer to be helpful overall.	

helped us along the way, like as a process that it was just easier to apply information there and then just write the paper because all the information that we had already was with this whole organizer. Researcher: Thank you, Jasmine. I would like to thank everyone for participating in today's interview. There are no further questions. Researcher: Good morning, everyone. I would like to welcome Heather, and Justin, and Haydon to our discussion. Looking down at your question sheets, I just want to go around and see how you felt about working with the graphic	Found organizer to be helpful overall. Organizer helped to apply information to the essay. Helped to organize ideas when writing essay.	

organizer. Please take a look at question number 1. Heather, what do you think about Question Number One?. Do you believe your ability to write persuasively has improved? If so how and why? If not, why not? Heather: Um, I thought it did really help me, because I was able to like, look at both the, what other people think, all the different options I could choose from, and my, um, idea and what other people's ideas could be so I could work them into my essay. Researcher: OK. Take a look down at Question Number Two. Hayden, did you find using the Paul and Elders graphic organizer	Found graphic organizer to be helpful. Could write reasons to support as well as oppose argument. Found organizer helpful in choosing which side to support through weight of evidence. Organizer helped to apply information to the essay.	

helpful when you wrote for your practice persuasive essay? If so, how and why? If not, why not?		
Hayden: Um, I found it, it was helpful to me because when I wrote my introduction, it was really helpful. Because, it sort of tells you when to put your thesis statement, where to put your opinion, where to put the opposing opinion, and it helped me in my introduction. When I was writing my body paragraphs, it, it helped a little bit, but not as much, it kept putting like the thesis statement. I kind of wanted to focus on what I was trying to say, and less of what the other people were	Found graphic organizer to be helpful. Helped to organize ideas when writing essay.	

trying to say. So, it was helpful more so in the introduction then in the body paragraphs. Researcher: Thank you. Taking a look here at Question Number One, Justin, I would like to hear from you on Question Number One, please. Justin: Well, I said, it uh, help me, like, write more persuasively because, like the, um, organizer, like it helped with all, like everything I needed to know to write my essay, and it, like, make my thoughts like, all together, so it helped me to write more clearly, and it organize my thoughts so I can write better.	Graphic organizer more helpful in writing introduction than in essay body paragraphs. Ability to construct a persuasive argument has improved. Helped to organize ideas when writing essay.	

Researcher: Thank you. When we are going down and taking a look at Question Number Three. If you were to change one thing about the graphic organizer, what would it be? Heather, what do you think? Heather: Um, I said that for the, um, for the evidence, if we could have more room for that, because I was kind of like scrunching everything in there. Because it was, yeah, that's the only thing I would change. Researcher: Yes. This is on 8.5 x 11" paper, which is standard paper. Yes, when I was creating this I did - rather I thought - of creating	Writing ability has improved. More space needed to write within organizer boxes.	

or making it on legal paper, which is much larger, wider and longer. But then I thought perhaps this could be clumsy, because it would have to be folded in half in order to get it to you for your use. However, that is a good point Heather, thank you. Hayden, I do not believe I asked you Question Number One. What do you think? Hayden: I said that my ability to write an argument, ah, persuasively has improved. And, the big reason why it improved was because I understand how, like, to support the arguments that I am making better than I was able to before. And, the organizer	Ability to construct a persuasive argument has improved. Improved ability to support argument.	

sort of helped with that, and just me, like learning throughout school helped a lot too, because I could see, like I always able to find a good argument, but my teachers would always ask me "why?" and I couldn't really support it. So, now I'm able to do that a lot better. Researcher: Thank you. Justin, how about Question Number Two. I do not believe I asked you that question. Justin: I thought it was helpful, because, like, it, before like without the organizer, I, like didn't really like having my	Found graphic organizer to be helpful. Found graphic organizer to be helpful.	

thoughts altogether. So, with the organizer the points of view and the evidence it may me like realize like everything I need, the essentials to writing a good persuasive essay. So it helped me, like write a way better essay than I used to.	Helped to organize ideas when writing essay.	
Researcher: Thank you, Justin. Okay, how about when we are looking at Number Four, Heather. What do you think about Question Number Four?		
Heather: I think that my ability to, um, construct a persuasive essay was really improved because, um I was now thinking about the opposing side, and what they would say about it and	Writing ability has improved.	

how I could talk about how what they were saying was not really wrong, but I could say that mine was better in a way.	Found graphic organizer to be helpful.	
Researcher: So, you are saying that you would take the opposing side and look at what they were saying, and refute it maybe...	Consider opposing viewpoints.	
Heather: Yeah.	Experience with writing persuasive essays has improved ability to construct an argument.	
Researcher: Okay yes, because now that was in front of you. Did anyone else feel that way? In that now you would see the opposing side of the argument and maybe you could embed it or put it in your argument and counter it to make your argument stronger? Did anyone try that?	Could write reasons to support as well as oppose argument.	

Justin and Hayden in unison: Yeah.		
Researcher: You did? And you found that was helpful?		
Hayden: Yeah, I thought that it was helpful because, like when you see the other person's argument, you can look back on to what you are trying to say and, you can find the little "in's and out's" of what they are trying to say, and like make your argument stronger.	Found organizer helpful in choosing which side to support through weight of evidence.	
And then, it was also, when they gave us the, the readings about the different arguments in the CAPT essay, I would try to look for the strongest for the one that I was supporting, and then not the weakest but the ones that I could, like	Organizer helped to apply information to the essay. Organizer helped to apply information to the essay.	

capitalize on the most for the opposing ones. So, I thought that was helpful, that we were, like able to see both sides.		
Researcher: Thank you. Okay, when we go back and we take a look at Question Number Three, Justin, I don't believe that I asked you Question Number Three.	Could write reasons to support as well as oppose argument.	
Justin: Well, the only thing that I would really change about the graphic organizer would be that, I would like to have a little more space to write things out, so like I could just see my thoughts there.		
Researcher: That's fine. What do you think when you are looking at Question	More space needed to write within organizer boxes.	

Number Three Hayden? Hayden: I thought it was good. I thought it was, like the space was okay, because when I write things down I write like little bits and pieces that, like spark what I'm trying to say and then I usually build off of it. But, I would say more space too, because like, the people, they just write down what they want to say and copy it, and it would be helpful for them to see it. Researcher: Thank you. Looking down at Question Number Four, Justin, what do you think about Question Number Four? Justin: Well like, my ability to construct an argument, it's better, because like,	More space needed to write within organizer boxes.	

without the graphic organizer before I was like, not really writing good persuasive essays. And, the trick is like, afterward I was able to construct a thesis statement, a persuasive essay, and just gave me everything I needed to write a good essay.	Found graphic organizer to be helpful. Ability to write a thesis statement has improved.	
Researcher: Thank you. As I am looking down at the questions, I do not believe that I asked Heather this question. When you look at that, did you find using the Paul and Elders graphic organizer helpful when you wrote for your practice CAPT persuasive essay? If so, how and why? If not, why not?	Ability to construct a persuasive argument has improved.	

Heather: I said yes, because it was a way to kind of look at everything over, like once I had everything down I could look everything over, and see it all down on paper and realize how I was going to construct it and what was going to go where-it made it so easier to see all of this.	Found graphic organizer to be helpful.	
	Helped to organize ideas when writing essay.	
Researcher: Thank you. Hayden, when we go down to the last one here, Number Four-what do you think about your ability to think and construct an argument; has it changed? If so, how and why? If not, why not?		
Hayden: It has changed. Like, in the beginning of the year, before, like all of the CAPT's and all the prepping	Ability to construct and think in argument has changed due to experience	

and all that, I was, I was constructing arguments that were, they were like kind of good but not the best that they could be. Because they were just, kind of focusing on the points that were the easiest ones to make, like a lot of the times it was about like money or like stuff like that because those are easy. And then by the time CAPT came around, I was thinking about like, not the deeper part/aspect of an argument but how to make it more relatable to like a lot of people instead of just certain ones I'm just talking to. And so, I thought that changed it a lot, and then supporting it helped a lot because I couldn't really	with graphic organizer.

Experience with writing persuasive essays has improved ability to construct an argument.

Ability to construct and think in argument has changed due to experience | |

support it and then with all the prepping I am much better at it.	with graphic organizer.	
	Easier to support opinion.	
Researcher: Good. All of you mentioned as I listen to you, you are all mentioning about how, and correct me if I'm wrong, but perhaps you are feeling better organized in the overall writing process.		
Students in unison: Yes.		
Researcher: And perhaps you are thinking more critically about what you are reading rather than just simply trying to look for something and put it and plug it in-I think you	Helped to organize ideas when writing essay.	

mentioned that Hayden, right? Not just looking for something to plug in there, but actually -and the reason why I mention the more critically is because you were talking about how, I believe, Heather how you mentioned where you could see the other side of something with this. And then, refute it. And I believe at one point all of you said that you might have done that, and you mentioned one where there was this thing where, I don't know what the topic was but there's the opposing side and you say that well, the opposing side says this but - you counter it. Now, did anyone encounter that moment such		

as this? Heather: Yes. Researcher: In summary when you look down at the organizer, did you find it more helpful to have the arguments on a two-track system coming down or you could look at either side, or was it too much to look at and to fill out before writing? What do you think?	Experience with writing persuasive essays has improved ability to construct an argument.	
Justin: I thought it was fine, because since they are right next to each other, you can like easily see both of them, so you know which is which. And, you can see	Found graphic organizer to be helpful.	

like which side, like say if you want to write about one side that has more evidence, then you could write about that side. It's right next to it, so you will know what to write about. Researcher: Thank you. Anyone else? How you feel about that? Yes, Hayden. Hayden: I thought it was good. Because, like when you see the support side and then the, the opposing side, like when you write something down in the support side and just think about what you want to say for opposing side to make the support better. But, I remember the 1st time I used it. I kind of, I think I did it wrong. The organizer	Found organizer helpful in choosing which side to support through weight of evidence. Found organizer helpful in choosing which side to support through weight of evidence.	

was set up, but I look at it the wrong way. And it was because I would write something down for the support, and then I wouldn't really, like write the same topic for, for the opposed, like a different topic that would help the opposed. And when I got my thesis statement, I didn't really know which one to pick. So, I kind of realized that, that you have to pick before you start writing instead of like after, because then you can, like load up one side and then try to load up the other one with, like counter arguments and stuff like that. Researcher: Working off of your point there, as well as	Layout of organizer may initially confuse students. Layout of organizer may initially confuse students.	

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experience. Let's say a student goes in, and I know one of the topics was initially should there be a recording device in the car when the kids drive it, right? Parents could see everything. There are just a number of topics did you experience and you get practice writes or interventions. Do you think that graphic organizer might help a student formulate an opinion? Heather, what do you think? Heather: Yes, because that way you can write both for the support; you can write that it is safer and that all things that can go for it. And then you can write	Found organizer helpful in choosing which side to support through weight of	

about how about privacy, and all of that stuff on one side and so there's 2 different ones and then that way you can use it both ways, you can use it both ways, you can pick before or you don't have to, and then you can see "Oh well, I'm more on this side so I'm going to use this side, but I'm going to use some pieces from this too." Researcher: Thank you. Question at Large: I know we used this, and by the way, you are the only students in the state that were able to have used this in preparing for the CAPT. Do you think that this might be helpful 2 kids and other schools? Or, do you think	evidence. Could write reasons to support as well as oppose argument. Consider opposing viewpoints. Found organizer helpful in choosing which side to support through weight of evidence.	

perhaps not? Hayden: I thought it would be helpful. Because, I remember doing the gambling one, were it said teens gamble too much. And at the time, like, none of my friends gamble so I didn't really, I couldn't really connect to it or relate to it. So I really didn't have an opinion. But, when I wrote stuff down on the organizer, I kind of, like saw that one side had more pieces of evidence than the other, so it helped me form an opinion. And I just think that'll happen to a lot of kids if they don't have a topic that's relatable, like if they get a gambling one or something different that	Found graphic organizer to be helpful. Helped student form an opinion on the writing topic.	

they can't really think about because it hasn't happened to them. Researcher: Thank you. What do you think about what Hayden just mentioned, Justin? Justin: Yeah, like a gambling topic. I was like, I didn't know anyone they did that, and like crazy stuff, so like, um all right (laughter) and so, I just like use a graphic organizer and just put the issues on both sides-evidence, beliefs and everything and it made it just so much more clearer and I knew what the write, so without it I would be able to do it. Researcher: Thank you. In	Found organizer helpful in choosing which side to support through weight of evidence. Found organizer helpful in choosing which side to support through weight of evidence. Helped student form an opinion on the writing topic.	

leaving this discussion today, you think that this may be helpful in looking at other writing applications, such as someone writing a letter to the editor, or to argue their viewpoint about supporting a certain political candidate? What do you think? Heather: I think it would be, because just like they were saying some topics that kids don't really know about, so they need to form an opinion and that's what this can help them do, like I remember in middle school we were talking about school lunches and everyone got such a great grade on it because everyone was connected to	Helped student form an opinion on the writing topic. Easier to support opinion.	

it, and they all were, they all knew what they wanted to say and stuff like that. So with this, it would help them form an opinion and help them talk about it. Researcher: Thank you, Heather. And thank you all for participating in our focus group today	Helped student form an opinion on the writing topic.	

Students believed that the Paul's Graphic Organizer improved their persuasive writing abilities.
Writing ability has improved. XXX
Found graphic organizer to be helpful. XXXXXXXXXXX
Found organizer to be helpful overall. XXX
Graphic organizer more helpful in writing introduction than in essay body paragraphs. X

Students believed that the Paul's Graphic Organizer improved their organization skills when writing persuasive essays.
Helped to organize ideas when writing essay. XXXXXXXXXXX

Students believed that the Paul's Graphic Organizer improved their ability to take a position and construct an argument when writing persuasively.

Ability to write a thesis statement has improved. XX
Teachers have allowed students to think more clearly with graphic organizer. X

Could write reasons to support as well as oppose argument. XXXXX
Consider opposing viewpoints. XX
Found organizer helpful in choosing which side to support through weight of evidence.
XXXXXXXXXXX
Helped student form an opinion on the writing topic. XXXX

Easier to support opinion. XXXX
Improved ability to support argument. X
Ability to construct and think in argument has changed due to experience with graphic organizer.
XXXX
Experience with writing persuasive essays has improved ability to construct an argument. XXXX
Ability to construct a persuasive argument has improved. XXXX
Organizer helped to apply information to the essay. XXXX
Organizer helped to incorporate quotations from articles. X

Students believed that the Paul's Graphic Organizer should be adjusted to allow more space to write.
More space needed to write within organizer boxes. XXXXX
Additional box for the writing of main ideas. XX
Need additional boxes for the writing of main ideas/evidence. X
Inclusion of lines within boxes. X

Graphic organizer does not need modifications. X

Layout of organizer may initially confuse students. XX

Appendix P: Teacher Focus Group Cycle Coding

Transcript	Preliminary Codes (Descriptive Coding) First Cycle	Final Codes (Pattern Coding) Second Cycle
Researcher: I would like to thank everyone for being here and what I would like to do is go in order to talk about the 1st question. I will start with Teacher number 1. Taking a look at Question One, what you think what are your feelings about Question Number One? Teacher number 1: I think that the organizer has helped me guide my students on the CAPT writing in terms of the persuasive writing that the CAPT writing is looking for on a current issue, a modern issue, taking a yes or no position, but a challenge	Positive value of the organizer.

Challenge to use with | |

that I had was that it wasn't as applicable to the historical writing that we do that students must do during the semester, we do the CAPT essay for our baseline and our midterm, and then our practice CAPT and final but in between we're practicing persuasive writing using historical document based questions, ah so we would, ah what we have to do was adjust it, well not adjusted but rather translate it in order to fit the specific topics. So instead of a yes or no side it would, it had to, adjust to, let's say ah, what was that one we did (looking toward colleagues) oh yes, Athens or Sparta?	historical prompts/process. Adjust it. Translate it. Adjustment.	

Researcher: Oh, I see, absolutely. Teacher number 1: So, we had to kind of make it fit more with our historical writing. I think in terms of the CAPT for CAPT writing though, it did, ah, kind of help me help them with the, beyond the formulaic writing, because this goes beyond the formulaic idea of the three paragraphs, because it includes some ah, the belief and the consequences that they don't otherwise include in the formula. Researcher: Thank you. Researcher: What do you think, Teacher number 2?	Had to make it fit (historical). Pushed students beyond formulaic writing. Includes belief and consequences.	

Teacher number 2: Ah, I would have to agree with Teacher number 1 that the organizer certainly helps with CAPT writing, I said ah, you know, in thinking about this question that the piece, the component that reversed the consequences, is something that I may have used, ah, in the future I may have used, I may use more directly but indirectly I was, I would, based on the fact that you had it on this organizer, I would try and use that kind of idea in brainstorming; "OK, well, why would I support the side, or what does it mean to support this side?" So, that definitely helped me in my own reflection of how I	Positive value of CAPT organizer. Value including consequences. Value in writing lessons/value of using consequences in future lessons.	

teach writing. And, the belief part as well, what is a belief that makes us support or, opposed this issue or problem.	Promoted reflection of own teaching. Promoted reflection on belief.	
Researcher: OK, Thank you. Teacher number 3, what did you think of Question One, how did you feel?		
Teacher number 3: Ah, in terms of learning and a new ways to teach writing, not necessarily. But, I definitely learned more in terms of preparation and organizing of ideas, not so much the actual writing, but in terms of planning, absolutely. The graphic organizer helped, big-time. The one thing that I would say is that a lot of times with certain historical	Not helpful for teaching and learning. Used for preparation and organizing/planning.	

essays it is harder to use the consequences for supporting a position in that column, but other than that I thought it was, I thought it was really helpful in terms of ideas, and I even liked the thesis statement on the bottom to get them started. So, overall, I think it helps my students organize their ideas.	Challenge to use with historical prompts.	
	Helpful with ideas, liked thesis statement (in vivo code).	
Researcher: Thank you. Let's take a look at Question Number Two. Let's start with Teacher number 1. How did you feel about that, Teacher number 1?

Teacher number 1: I think that their ability to write has absolutely improved, and we have observed that all | Organize ideas. | |

semester, that the students have become definitely stronger writers, I just don't have the, I guess the data, to say that it was specifically in relation to the graphic organizer, or other	Improvement of writing.	
variables. So, their writing had absolutely improved, ah I think, I think that the graphic organizer most	Question of the cause of improvement.	
likely help them, but I cannot say 100%, you know, each student would have had different variables that would appeal to them, I think, because we worked a lot on writing. The graphic organizers is one	Improvement of writing.	
component of it, but they practice other, other, you know thesis writing; ICE paragraph, Introduce, Cite,	Uniqueness of students.	

Explain- and, ah, the different departmental methods that we use. So I think that probably been a combination of both that has improved them. Researcher: Thank you. What do you think, Teacher number 2? Teacher number 2: I said the same thing, that it was a combination of both and, even though it was a combination of those I also feel that having seen this organizer at the beginning of the school year, the fall semester, that seeing the belief part, the consequences part, may have may indirectly influence what I was going over with them in the	Influence of other writing strategies. Influence of other strategies.	

classroom, because I thought, you know, this was, this is something that makes it so simple for them even though it is higher order, and like Teacher number 3 said before, a lot of students overlook the process of piecing their ideas together before they go to write and many of them, especially with CAPT writing, don't use the graphic organizers, and this is something that could certainly, ah, that certainly helps them to form an opinion, a stronger opinion about it, or at least feel more engaged in the topic. So, I would say that it's a combination of things that we already have in place,	Influence of organizer on teaching. Makes it so simple for them (in vivo). Helps students form an opinion. Feel more engaged in the topic.	

and also how this influenced my own actions in the classroom or how I approached different techniques, techniques of teaching how to write an ICE paragraph, for example Introduce, Cite and Explain. It pushed me to think more of ICE, meaning Introduce, Cite, Evaluate, and think about, you know, the consequences, kind of the "so what" of analysis.	Influence on other writing strategies.	
	Influence of organizer on teaching.	
Researcher: Thank you. Teacher number 3; how about Question Two. What did you think?	Consequences.	
Teacher number 3: I think it absolutely helped them, like I said, organize their ideas and I think that impacts writing: you need to		

organize your ideas before you can write so that absolutely goes hand-in-hand with it. I like the way this challenges students, a little bit more than the (traditional) CAPT organizer. It makes them think a little deeper, you know, it requires more. You have to come up with facts, quotations, you know, that the consequences really have the students weigh in on the issues of both sides, not just one, but both sides, so overall I think, I don't think there's too much more you can do in terms of preparing to write, I mean I don't really know what else can be added to it. I think it helps.	Organize their ideas (in vivo). Challenges students. Requires more. Value of including consequences.	

Researcher: Thank you. Looking at Question Number Three. Teacher number 1; What do you think about Question Number Three? Teacher number 1: I think that (pauses) looking at the Organizer, the first two stating the issue as a question, the importance of discussing it; I think those are important to start on, and I like the second as well, the second part; the belief, the consequences, and the thesis. What I'm - what I hover around are the points of view on the issue or problem and the reinforcing evidence. I think it's important to have them here, I just, I think I	Value of stating a question, value of focusing on importance of issue.	
	Belief.	
	Consequences.	
	Thesis (all in vivo).	

struggled a bit when I was first, you know using it and in teaching students how to use it in terms of translating that into a five-paragraph essay. In terms of, you know, turning these three lines, and then these three lines of evidence into their support for the five-paragraph essay, so I would look at that more closely I suppose, I don't know if I would necessarily change it because, it could end up being five pages if we did.	Teacher struggled with points of view and reinforcing evidence.	
Researcher: Sure.	Concern on how to translate points of view and reinforcing evidence into first-paragraph essay.	
Teacher number 1: But I think that would be a potential area that I would look at.	Concern that revisions would make organizer too long.	
Researcher: Thank you.		
Teacher number 2: I		

actually felt very differently. Ah, I thought that the part that says a belief that makes us support or oppose this issue or problem, and the part that says consequences for supporting or opposing this position, the language would maybe need to be changed, the students were very - were confused by that initially. And, as we worked on it, there were still some that really didn't understand what was expected of them, um a lot of the high-performing students understood it, but some of the others really needed that constant reminder of, okay, well what is belief, okay so I		

have to think, like conceptual, um, or impact, or what the consequence is, what would be the impact if I say or if I argued this,	Basic students needed reminders.	
what would that mean, what would that mean for society.	Basic students were confused by belief and consequences; advanced students did not struggle with this.	
Researcher: Thank you.		
Researcher: Teacher number 3, what do you think for Question Number Three?		
Teacher number 3: I also agree with Teacher number 2 in the, in terms of the wording, more so for the belief columns. I think those could be adjusted.		
Consequences, I think um, maybe you can add a little bit to it, but I think that's, that's fine, it's the belief part	Belief column headings need adjustment.	

can be very confusing to the students. So, I mean other than that, I really just said maybe that you can add a section where you can put topic sentences. But I mean, you don't want to get too crazy, because they still have to write your essay, so, I really think overall that it's just a good helper. Researcher: Thank You. When I approached this, back in the spring of 2011, ah when I sat to organize this, I put myself in the shoes, or the seat of a student topic that's looking at a CAPT topic and a lot of them look at it and say "Well, so what"? Okay; I don't care one way or another about should there	Belief confusing. Add section for topic sentences. Revisions could make graphic organizer too long. Good helper.	

be a camera, or should, sorry, should teenage drivers have their driving recorded okay, by an electronic device, by a computer? That was one of the writing prompts (referring to the Connecticut State Department of Education) that we had. And there are many writing prompts that they have. Or, "Gee, I don't care, for example, if the Athenians or the Spartans had a better form of government, you know how does it affect me"? With that in mind, of the "so what" student, we have all taught them, okay, you know, the students that really don't care one way or		

the other, did you think in the use of this it might have moved them toward one area or another more so than the regular state organizer, or less so? I don't know? What do you think? Anyone could weigh in on that.	(Probing question).	
Teacher number 3: I thought it, it organized ideas to help them think for themselves. You know, make their own decision. I don't think it's steered them one way or another.	Organized unmotivated students to think for themselves.	
Researcher: OK. Maybe I'm using the wrong term, Teacher number 2 when I say steered. Maybe to, to prompt them to take a position. Because one of the things that we noticed in	Didn't influence unmotivated student opinion.	

CAPT is that sometimes, and I noticed this in the writing too - and I've scored them for years - is that the student goes in there but they never taken a position on the topic. And that can happen. I am just wondering if this is more likely for them to take a position on something that they really don't care about, if the organizer would bring them, would bring them to do that. That is what I was trying to say. Teacher number 1: I think that this organizer would greatly help students to form an opinion compared with to what is already on the CAPT, because what is already on the CAPT		

assumes that you've developed a position already. This has them weighing both sides. Whereas, you know, it's, when they go to fill out the CAPT one (Teacher number 1 is referring to the traditional CAPT writing organizer) they make a list of reasons and then just base it on how many reasons they have, this actually gets them into the conversation, ah, so this is much more beneficial to a student. In terms of the students that have trouble connecting with the topic, as you were saying, this is something that could really, I think it really helps them because in this sense there	Helped students form an opinion to what is already on CAPT. Weighing both sides (in vivo). Gets them (students) into the conversation.	

asked an opinion, not so much, "OK, go locate me three arguments for both opinions. So this is, ah, much more beneficial to engaging the students in their own writing.	Asked an opinion.	
Teacher number 2: I would agree, I was thinking along the same lines is that it's, ah, it's making them take a position and find a position they agree with at least, more so than the other one, more than just the formulaic "can you write a five paragraph essay" about anything? It's actually taking into account the, the question and having them take a side and looking at the beliefs and looking at the consequences which is	Engaging the students in their own writing. Making students take a position.	

far more than the other organizer does. The other organizer is just going to show them which side has more evidence and then, you know, which side would thus be easier to argue.	Taking a side. Beliefs and consequences. Requires more than state organizer.	
Researcher: Thank you. One of my last questions, well rather just a couple of final ones, when you are looking at the ability levels that you teach, thinking back to the kids and thinking back to those ability levels and I know that this treatment and comparison that went across **all** ability levels, ah, pretty much, okay, I know that that one, if there is Honors and there is One and Two,		

and there was one group		
that we call Level Three		
that were in there, which		
group do you think was		
most willing to work with		
the organizer and seem to		
"flow" with it or work with		
it - which group do you		
think really did not care		
whether or not what they		
were getting, you know, if		
this was the organizer or		
not, I guess what I'm trying		
to say here is where you		
think the greatest impact		
was upon student levels in		
your professional opinion?		
Because you were working		
with the kids every day.		
What do you think?		
Teacher number 1: I had a,		
ah, I had two treatment		
classes; one was a Level		

Two Honors and the other was a College Prep. The Honors were more willing to take the time to understand what it was asking in the organizer, ah, the Level Two many of them just wanted to know what they needed to do and get it done rather than really sit there and think about what this was really asking them (pause). So, their experiences were a little different I think based on something intrinsic at that time. Teacher number 2: I presented, my treatment group was a Level Two College Prep. class, and, ah, they required a lot of guidance. At least initially	Differences in student abilities affected their work with the organizers.	

using how, how to use the document and then, reminding them as we would come back to it for different writing exercises, so I did not present it to my Honors class, but I would, based upon what I saw belief that they probably took it to the next level a little bit further, whereas the Level Two was, kind of struggling to complete it. Once they completed it, I did see in their essays, and did show in their essays. They would include in their, ah, conclusion the consequences and what this says about beliefs and, for example, the Athens and Sparta essay, ah, they were able to come back and say	Required a lot of guidance for College Preparatory Class. Level II students struggled. It did show in their essays.	

that that, you know, this is showing that knowledge and, and ah, innovation is more important than just brute strength. So, they were bringing it back to these issues and a consequence might be, that you know, future governments should focus towards, growing knowledge and innovation rather than brute strength, and those are the ideal ones that I got, those are the ones that I saw a real strength. Lower Two's that I have, students that are on the lower end of the spectrum, I guess we could say they struggled with it in terms of completing it and then in terms of looking back to it	The importance of consequences and beliefs. Apply consequences to a thesis statement.	

when writing there essay.		
Interviewer: Thank you.		
Teacher number 3, what do	Basic students struggled with completion.	
you think when we were		
looking at the classes		
overall?		
Teacher number 3: Well, I		
had two treatment groups		
that were Academic Prep,		
and the one Academic Prep		
in one General for the		
Control. The Level Two's		
seem to do fine with it,		
some better than others. The		
ability ranges are, um, quite	Level II did fine with this.	
substantial in that those		
classes as well, but I think		
the students that put the		
most effort in got a lot out		
of it, like Teacher number 2		
said, there are a lot of		
students who just want to		
do what they have to do to		

get it done. The lower (ability) kids did struggle with it, especially the consequences and the belief part. And, as well as the quotations and quotes that directly fit the issue or problem. So, but those are issues that we face regardless of the graphic organizer or not, (pause) but some of the kids in the lower level did very well with it, so, it did impact all levels. But, it depends on the, the uh, the students that day. Researcher: Exactly. Because we were work with adolescents and we know that some days they are, they are hitting on all of the cylinders, and on other days	More effort equals more out of it. Basic students struggled. Impacted all levels.	

they are not. With respect to this, things do not change. One of the things that we are looking at is, is that we are looking at the organizer and what it was designed to do is to help with critical thinking, that is to help you think more critically. I know that, again in the process of your lessons, when you were working with the organizer you expand upon that, especially the beliefs part– and that is critical thinking, especially trying to nurture that. Do you think that there needs to be more of that? We took a dabbling, if you will, or a limited time with this. Do you think that there needs to be more of that in the		

curriculum; teaching kids how to think critically? That is one of the things that I am coming across, especially when I am looking at the literature behind my research-how to help kids think more critically. Do you think their needs to be more of that, or at least some, you know, that is embedded in the curriculum? What do you think? Teacher number 1: I think there always needs to be more critical thinking in the curriculum. I think I think that, in terms of teaching it as a skill, it's a skill that, you know might be one of the most important ones, if not the most important skill	(Probing question for Chapter 4).	

that the students take out of high school, ah, because it encompasses all of their subject areas; it will carry forward into college work, home, whatever they go forward, so I think critical thinking can't be emphasized too much. The issue is, just, fitting in with everything else. So I think that, ah, wherever possible, we need to be embedding more critical thinking whenever possible.	Critical thinking is important.	
Researcher: Thank you. Teacher number 2, what do you think?	See critical thinking as separate from curriculum.	
Teacher number 2: I agree. I think that we need more, to add more critical thinking within our writing, or teaching of writing. What	Critical thinking needs to be embedded.	

we have focused on in the past, what we already have standing is the idea of a big idea statement, where the students have to, to compare and contrast different concepts and how they relate to the topic at hand. But, which kind of is along the lines of, consequences, and belief, but it's not organizing their idea to really connect it to each of their, um, ah, reinforcing evidence or there, um, different supports. So, I'd say more critical thinking needs to be done than writing. We do a lot within day-to-day lessons. Interviewer: Thank you. Teacher number 3, what do	Add critical thinking to writing. Current practices are basic. Current practices missing pieces of critical thinking.	

you think about the critical thinking piece within the structure, do we need more or less?	Need more critical thinking in writing.	
Teacher number 3: Critical thinking is vital, so that absolutely needs to be continued to be monitored, but also I think we do a good amount of it, in our curriculum and that's what we strive to do each day. So I feel that we are trying to; we could always use more. We are always looking in new ways to add it, in various ways through technology, writing, daily lessons, questioning-all of those things. So, we have to continue looking at ways we can get them to relate information to the modern	Critical thinking is vital. Needs to be monitored. More critical thinking is needed.	

world, and to continue improving. Interviewer: Absolutely. Thank you all for your time today.		

Almost all teachers believed that the Paul's Graphic Organizer improved students' writing abilities by requiring them to think beyond the normal state organizer.
- Value XX
- Pushed beyond formulaic writing X
- Beliefs and consequences XXXXXXXX
- Thesis statement XXX
- Promoted student organization XXXX
- Helped students writing XX
- Makes it simple for students X
- Helped students form an opinion XXXXXX
- Students more engaged in the topic - XXX - More effort equals more achievement X
- Challenges students XXX
- Value of including consequences X
- Value of stating a question and focusing upon an issue X
- Overall good helper, student still has to write essay X

Teachers believed that the Paul's Graphic Organizer improved and assisted in their daily teaching efforts.
• Helped with lesson planning XXX
• Promoted reflection of own teaching XX

Teachers believed that the Paul's Graphic Organizer had to be adjusted to use in the classroom. However, they believed that revisions would be difficult to make.
• Difficulty using historical prompts XX – adjust it XXX , translate it X
• Revisions to improve would make organizer too long XX
• Belief columns needed adjustment X
• Teacher struggled with points of view and reinforcing evidence XX
• Add section for topic sentences X

Teachers questioned whether Paul's Graphic organizer had caused the improvement in writing scores.
• Questioned whether organizer caused the improvement XXXXX

Teachers disagreed about how differences in student abilities affected the outcome X
• Some teachers believed that basic students need reminders about beliefs and consequences XXX – and struggled with completion X
• Some teachers believed that students required a lot of guidance for students other than advanced XX
• Other teachers believed that Level II did fine with Paul's organizer and that it impacted all levels XX
Challenges
• Not helpful for teaching and learning X

Appendix Q: Sample Entry, Audit Trail

Sample Entry, Audit Trail

Date	Activity	Reflection
9/01/11	Met with BHS Social Studies teachers to discuss research study: focused upon critical thinking and persuasive writing with organizer. Answered questions. Jessica had additional questions that I answered in a follow-up e-mail.	Teachers appear to be interested, but slightly concerned about additional work upon their already busy schedules. Answered all of Jessica's questions in a follow-up e-mail.
9/07/11	Met with Dr. Heilbronner at WCSU from 4:30 to 5:30 in order to set up treatment and comparison groups.	Pleased that Dr. Heilbronner has noted how quickly the research study has gotten off the ground since July.
9/08/11	E-mailed scoring rubric to teachers. Reconfirmed additional September 16th training date.	I feel good that I was able to answer all of the teachers' questions. They appear interested and willing to work with me on the research study.