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EFFECT OF A MODEL FOR CRITICAL THINKING ON STUDENT

ACHIEVEMENT IN PRIMARY SOURCE DOCUMENT ANALYSIS

AND INTERPRETATION, ARGUMENTATIVE REASONING,

CRITICAL THINKING DISPOSITIONS, AND HISTORY CONTENT

IN A COMMUNITY COLLEGE HISTORY COURSE

by

JENNIFER H. REED

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
in Curriculum and Instruction with an emphasis in
Interdisciplinary Studies
College of Education
University of South Florida

December 1998

Co-Major Professor: James Eison, Ph.D.
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ACKNOWLEDGMENTS

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An Abstract

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Co-Major Professor: James Eison, Ph.D.
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This study investigated the effect of integrating Richard Paul's model for critical thinking into a U.S. history course on community college students' 1) abilities to think critically about U.S. history and about everyday issues, 2) dispositions toward thinking critically, and 3) knowledge of history content. This study also examined if age (under 22, 22 and older) or gender moderated the effectiveness of the instructional method.

Four sections of U.S. History 1877 to the Present participated in this one-semester study. Two sections were randomly selected to serve as the experimental group and the other two sections served as the control group. The experimental group (n = 29) received approximately 90 minutes of explicit instruction distributed over the semester in using Paul's model for critical thinking to analyze and interpret primary source documents. In addition, the model was integrated into a series of assigned classroom activities. The control group (n = 23) was taught in a more traditional manner.

Students took three pretests and four posttests to measure the effectiveness of the instructional model: a Documents Based Question (DBQ) from an Advanced Placement Examination, the Ennis-Weir Critical Thinking Essay Test, the California Critical Thinking Dispositions Inventory (CCTDI), and a History Content Exam. The primary statistical analyses were done with 2 (group) x 2 (age) x 2 (gender) ANCOVAs using pretests as covariates. The experimental group scored significantly higher on the DBQ, p = .004, and on the Ennis –Weir, p = .0001. Effect sizes (Cohen's f) were DBQ = .48 and Ennis-Weir = .83. Statistical tests did not indicate significant

differences on the CCTDI or on the History Content Exam. No significant differences were found in the effectiveness of the method of instruction by age or gender.

Three major findings emerged from this study: 1) community college students' abilities to think historically and to think critically improved in a single course; 2) community college students' end of term knowledge of history content did not suffer when training in critical thinking abilities was integrated into course material; 3) age and gender did not play significant roles in developing college students' critical thinking abilities.

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CHAPTER I

INTRODUCTION

Statement of the Problem

From the time of Socrates to contemporary concerns about the need for an

educated citizenry and quality work-force, the ability to think critically and to

reason well has been regarded as an important and necessary outcome of

education. In this century, John Dewey (1933) pointed out that learning to think is

the central purpose of education. More recently, at the 1990 education summit,

the National Education Goals Panel identified the need for a substantial increase

in "the proportion of college graduates who demonstrate an advanced ability to

think critically, communicate effectively, and solve problems" (National

Education Goals Panel, 1991, p. 62). To some scholars, including Michael

Scriven, "training in critical thinking should be the primary task of education"

(1985, p. 11).

Educators are not alone in recognizing the importance of critical thinking.

The demands of employment in a global economy, the survival of a democratic

way of life, and personal decision making in a complex and rapidly changing

society require people who can reason well and make good judgments. As

America moves toward a technology-based economy facing world-wide

competition, employers demand workers who can think flexibly and analytically,

integrate information from a variety of sources and perspectives, and make

profitable decisions efficiently. Our pluralistic society needs citizens who can

fairmindedly evaluate the relevance of different perspectives on complex

problems. Additionally, making sound personal and civic decisions requires the

ability to interpret accurately information filtered by media that emphasize

promotion and imagery over reason (Goodlad & McMannon, 1997; Halpern,

1998; Holmes & Clizbe, 1997; Hudson Institute, 1987; Hunt, 1995; King, 1994;

Packer, 1992; Secretary's Commission on Achieving Necessary Skills, 1991). For

students, workers, and citizens, critical thinking is an essential tool for performing

successfully in a complex and rapidly changing world. In each of these roles, as

David Perkins (1989) points out, we must

> examine the factors impinging on a situation, forecast the
>
> outcomes of possible courses of action, evaluate those outcomes
>
> and weigh them relative to one another, and try to choose so as to
>
> maximize positive outcomes and minimize negative ones. Further,
>
> the beliefs we hold, and consequently the inferences we later make
>
> and attitudes we later assume, depend in part on our reasoning
>
> about the grounds for those beliefs. Accepting beliefs wisely serves
>
> the ultimate end of later sound conduct as well as the more
>
> immediate end of sound belief itself. (p. 175)

Despite widespread expressions of concern about developing critical

thinkers, studies have shown that most schools are neither challenging students to

think critically about academic subjects nor helping them develop the reasoning

abilities needed to deal successfully with the complexities of modern life. Our educational system continues to graduate students who do not reason well (Goodlad, 1984; Goodlad & Keating, 1994; Kennedy, 1991; Paul, 1993). Recent studies by Perkins and associates (Perkins, 1989; Perkins, Faraday, & Bushey 1991) and Kuhn (1992) have documented the faulty everyday reasoning and poor argumentation skills used by most people. Even a college education appears to have a limited effect on graduates' critical thinking abilities, including making reasonable interpretations of texts and formulating unbiased and well-reasoned arguments (Halpern, 1998; Keeley & Browne, 1986; Kurfiss, 1988; Perkins, 1985). The California Commission on Teacher Credentialing recently completed a study of college and university professors showing that despite a large majority who stated that critical thinking is an important goal of their instruction (89%), only a small percentage (19%) could clarify what they meant by critical thinking, and an even smaller percentage (9%) actually teach for critical thinking on a typical day (Paul, Elder, & Bartell, 1997). These findings indicate that while concern about critical thinking is widespread, effective instruction for critical thinking is not occurring on a broad scale.

College-level history courses provide rich and frequent opportunities to develop skills and dispositions needed for higher order thinking, yet instructors of introductory history courses, like faculty surveyed in the recent study by the Paul, Elder, and Bartell (1997), often fail to challenge students explicitly to develop reasoning abilities (Capps & Vocke, 1991; Holt, 1990; Leinhardt, Stainton, Virji, & Odoroff, 1994; O'Reilly, 1991). Since history provides "a storehouse of ill-

structured, indeterminate, and partial . . . texts, not unlike those that confront us every day" (Wineburg, 1994, p. 127), training in the critical analysis of historical documents may help students develop skills needed in everyday reasoning tasks such as analyzing newspaper editorials and campaign speeches. Yet in many introductory courses, primary source documents are used rarely or not at all. When they are assigned, they are often taught in a didactic manner and are seen by students as another source of "facts" to memorize for an exam question rather than as a basis for developing higher order thinking skills (Perfetti, Britt, & Georgi, 1995). Even instructors who assign primary source documents for the purpose of developing critical thinking skills and encouraging students to "think like historians" often fail to accomplish their objective unless they explicitly teach skills of historical thinking (McDiarmid, 1994).

In order to understand how instructors can better use historical documents to teach students to think critically about history, more empirical studies in learning and thinking in history are needed. Voss and Carretero (1994) have pointed out several important reasons why additional research in enhancing learning and understanding in history and the social sciences is vital. First, contemporary society is faced with problems partially created by scientific progress that cannot be solved through further scientific achievements. Ecological devastation, nationalistic wars, religious and ethnic tensions, hunger and poverty, and population expansion are complex problems requiring reasoned judgment and good policy decisions. History courses provide a broad perspective and insight that can help in making wise choices. Secondly, expanding students'

knowledge and understanding of history is important for understanding present circumstances in both our own country and the rest of the world. A third reason to study learning and reasoning in history courses is to provide a broader understanding of human thinking processes and the extent to which they are the same or different from one domain to another. Finally, a fourth reason to study learning and reasoning in history courses is to improve student instruction in these domains, since studies in the United States and other countries have indicated that student knowledge of history is quite poor. Yet despite these important reasons for enhancing student learning in history, cognitive scientists have only recently recognized history as a fruitful area for research. History continues to suffer from a lack of knowledge about how students learn history and how history can be used to develop students' critical thinking skills for the benefit of modern society.

This study attempts to add to the knowledge of how students learn history and how history courses can be used to develop students' critical thinking skills by assessing the effectiveness of Richard Paul's model for critical thinking (Foundation for Critical Thinking, 1996; Paul, 1993) on improving students' critical thinking abilities in history courses. Paul is a leader in the critical thinking movement who influences the field through his writings, research, international conferences, and nationwide training seminars for educators. He argues for educational reform that better addresses our contemporary need for developing critical thinking skills, and he has developed a model for critical thinking that provides a practical and flexible approach to meeting these concerns. Paul presents his approach to teaching for critical thinking as a general model

applicable to any problem or issue requiring reasoning, claiming that it is equally

applicable to issues in academic subjects and to everyday problems. Further, it

can be used by anyone wishing to improve his or her thinking, from primary

school students to adult learners. Thus, if effective, widespread use of Paul's

model would not only lead to deeper learning and more critical thinking in history

(or any academic subject), it should also result in better critical thinkers in

general.

   Paul's model was selected from among several general critical thinking

models for investigation in this study because of its appropriateness for document

analysis, its rich theoretical grounding, its flexibility and applicability to a broad

range of circumstances requiring good reasoning, its restraint in using specialized

terminology, and its inclusion of standards and dispositions. Paul's approach

seems particularly applicable to thinking about historical problems and

interpreting primary source documents. If such a general model can help students

improve their abilities to think within history and other domains of knowledge

and at the same time to think more effectively about everyday reasoning tasks, it

needs to be more widely integrated into educational curricula. As is the case with

many current models for critical thinking, especially those based in philosophical

traditions, the model has not previously been tested empirically.

Purpose of the Study

   The purpose of this study was to assess empirically the effectiveness of

teaching Richard Paul's model for critical thinking (Foundation for Critical

Thinking, 1996; Paul, 1993) on community college students' abilities to think

critically about U. S. history and about everyday issues and on students'

dispositions toward critical thinking in general. The model (treatment) was used

to instruct students in analyzing historical documents so that students might (1)

develop abilities needed to think critically about history, for example, interpreting

and integrating information from different sources and constructing and arguing a

case to explain the evidence, and (2) use those same abilities for everyday

reasoning tasks. If there were significant changes in student achievement at the

end of a semester-long instructional treatment program, this would suggest that

the model may provide an effective strategy for teaching critical thinking in

history. While this study addressed the thinking skills of college students, the

questions that were explored are important for all grade levels since many of

Paul's publications have been developed for students in grades K-12.

Research Questions

Based on the statement of the problem, this study sought to answer the

following questions.

1. Will a group of community college history students who receive explicit

training in analyzing and interpreting historical documents according to Paul's

critical thinking model perform better on a test that requires them to analyze and

synthesize a set of primary sources than a group of similar students not receiving

explicit instruction in critical thinking?

2. Will a group of community college history students who receive

training in Paul's critical thinking model perform better on a task requiring

evaluation of arguments on a contemporary issue than a group of similar students not receiving explicit instruction in critical thinking?

3. Will a group of community college history students who receive training in Paul's model for critical thinking differ in their attitudes and dispositions toward critical thinking from a group of similar students not receiving explicit instruction in critical thinking?

4. Will a group of community college history students who receive training in primary document interpretation according to Paul's critical thinking model perform better on a test of history content knowledge than a group of similar students not receiving explicit instruction in critical thinking?

5. Will there be a statistically significant difference in student performance by method of instruction according to age (under 22, 22 or older)?

6. Will there be a statistically significant difference in student performance by method of instruction according to gender?

Definitions

The following terms are defined for use in this study.

Argument. An argument is a reason or reasons offered for or against a proposal or proposition. This term refers to a discussion in which there is disagreement and suggests the use of reasoning and evidence to support or refute a point. In the critical thinking sense, argument is conducted in a spirit of good-will, openness to alternative perspectives, and truth-seeking (Paul, 1993). Students will be asked at varying times to generate, support, and evaluate arguments.

Contextualization. One of three heuristics identified by Wineburg (1991a) as basic to thinking historically. Contextualization refers to historians' concerns with when and where events took place, including chronology of an event, distance in time between the event and the recording of the event, and geographical and weather conditions.

Corroboration. One of three heuristics identified by Wineburg (1991a) as basic to thinking historically. Corroboration is the act of comparing documents with one another and checking important details with different sources before accepting them as plausible or likely.

Critical thinking. The consensus definition developed by 46 experts from various disciplines who participated in a research project resulting in <u>Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction. Research findings and recommendations</u> (Facione, 1990) was accepted for use in this study. This report is often referred to simply as the "Delphi Report." The Delphi experts defined critical thinking as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based." Critical thinking is a complex of skills and dispositions.

Critical thinking dispositions. The potential, natural tendencies, or personal inclinations to demonstrate critical thinking skills. Richard Paul's model (Foundation for Critical Thinking, 1996), which was used as the treatment in this study, includes the following traits of a critical thinker: independent thinking,

intellectual empathy, intellectual humility, intellectual courage, intellectual integrity, intellectual perseverance, intellectual curiosity, intellectual civility, intellectual responsibility, and faith in reason (see Appendix A for further descriptions). The seven critical thinking dispositions tested on the California Critical Thinking Dispositions Inventory (CCTDI), one of the instruments that was used in this study, are truth seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness, and cognitive maturity (Facione & Facione, 1992). Considerable overlap exists in these two lists despite the difference in terminology. The CCTDI, however, makes no claim to test for all critical thinking dispositions.

Critical thinking standards. Paul, whose model for critical thinking was used in this study, insists that there are universal standards or criteria for critical thinking by which all attempts to think critically should be measured. These include clarity, accuracy, precision, relevance, consistency, depth, and breadth.

Document based questions. In general, this term refers to tasks that require students to interpret primary sources in written or oral form. Operationally in this study, the term refers to a type of question on Advanced Placement history examinations prepared by the Educational Testing Service that provides students with a set of primary documents to read as the basis for writing an essay that integrates their interpretation of the documents with their knowledge of the historical period referred to in the question.

Primary sources. Historians base their research and organizing ideas on careful study of a variety of written documents such as letters, journals,

government documents, census data, newspaper accounts, maps, etc., as well as on oral narratives and/or material remains. All of these are considered primary sources, and history students frequently read *primary source readings (source readings)* or *primary source documents* as assignments in history courses. *Primary sources* are distinct from *secondary sources*, accounts by historians or other writers who have attempted to interpret events by analyzing and synthesizing various *primary sources.*

      Sourcing. One of three heuristics identified by Wineburg (1991a) as basic to thinking historically. Sourcing refers to historians' concern for checking the source or attribution of a document before reading it in order to be aware of possible biases, points of view, or limitations on accuracy.

Delimitations and Limitations

      History students from a community college in central Florida constituted the research sample. The question of generalizability of the present findings to a target population in other locations can be risky unless samples share similar characteristics (Gall, Borg, & Gall, 1996). Since many of the characteristics of Florida community college students who enroll in U.S. history survey courses are similar to students enrolled in college level U.S. history courses elsewhere, the findings of this study should prove educationally useful.

      Limitations to this study exist as well. These include the modest sample size (4 sections, 52 students) and the fact that students could not be randomly assigned to the treatment or control groups, short term of instruction (13 weeks), possible differences in daytime versus evening classes, and not having the

methods used by the instructor open to public verification. The use of intact

classes is frequently a necessity in educational research, and this limitation was

addressed through a pretest-posttest design. Possible differences in daytime and

evening classes were at least partly addressed through examining age differences,

since evening classes tend to be composed of older students. The short term of

instruction was necessitated by the semester system and the time allotted to

pretests and posttests. Instruction in the experimental model was done as

intensively as possible within the confines of required course material.

Concerning public verification of instructor methods, tape recordings of several

classes were made, with equal time given to experimental and control sections.

Another limitation of this study was the possibility of the Hawthorne

Effect. The Hawthorne Effect refers to a situation in which the experimental

conditions are such that the mere fact that a research participant is aware of

participating in an experiment improves performance (Gall, Borg, & Gall, 1996).

At the beginning of the semester, all students were told that they were

participating in a research study. Students were not told whether they were in a

control or an experimental section, thus the Hawthorne Effect should have

affected all sections equally. Test-wiseness or test-weariness and participant

mortality potentially provided other possible limitations to this study, but these

should have affected both experimental and control groups equally and therefore

should not have constituted a major problem.

Since the researcher was the instructor in all four history sections

participating in this study, consistency of instructional approach and quality

across all sections was high. The potential influence of experimenter bias in instruction was explored by using tape recordings at several points during the experimental study to help the instructor become aware of any tendencies toward bias in favor of one group or another. Also, "Student Perception of Instruction" forms were examined for evidence of bias (see Appendix B). The researcher used an additional rater for the essay instruments to check for possible bias in scoring, and essays were blind-scored.

Summary

This introductory chapter established the widespread interest in and need for better training for critical thinking. In addition, the multitude of opportunities that exist for developing critical thinking skills in college history courses was described. It indicated that the researcher tested a model, developed by Richard Paul, for infusing critical thinking into various domains by using it to train community college students to analyze and interpret historical documents. Six research questions were stated, indicating intentions to test the effectiveness of the model empirically using instruments that assessed students' analysis of primary source readings, everyday reasoning, dispositions toward critical thinking, and knowledge of history content. The effects of age and gender on the effectiveness of the model were also tested empirically. Additionally, this chapter provided definitions of important terms used in this study, and it identified possible delimitations and limitations of the study and indicated how they were addressed.

CHAPTER II

LITERATURE REVIEW

This particular study embraced several important areas of educational inquiry, and the many citations and research reports reviewed in this document place the study into an integrated perspective. This chapter is divided into the following sections: (a) definitions of critical thinking and its relationship to higher order thinking, problem solving, and other commonly used terms; (b) strategies and methods of teaching critical thinking to college students; (c) assessing critical thinking; (d) differences in reasoning ability and critical thinking that may be related to age; (e) differences in reasoning ability and critical thinking that may be related to gender; (f) the problem of transfer of learning, specifically critical thinking abilities, to other academic areas and to everyday reasoning tasks; (g) a review of current research on learning and enhancing critical thinking skills in history courses; and (h) summary of the literature. These areas of inquiry form the basis for the instructional treatment described in Chapter III.

Defining Critical Thinking

A review of literature in the field of critical thinking revealed a general lack of consensus on how critical thinking is best defined, on what critical thinking skills can and should be taught, and on determining the most appropriate framework for this teaching. As a whole, educational reformers have not even

agreed on terminology. While some scholars use "critical thinking" and "higher order thinking" interchangeably (Halpern, 1993), others make a sharp distinction (Facione, 1990). The relationship among "critical thinking," "higher order thinking," "thinking skills" and other terms such as "informal logic," "informal reasoning," "problem solving," "argumentation," "critical reflection," "reflective judgment," and "metacognition" have further complicated the issue. Other areas of disagreement and concern include (a) the extent to which critical thinking is subject specific, (b) differences between expert and novice thinking in a discipline and the extent to which novices can learn to think more like experts, (c) difficulties in separating higher order and lower order thinking skills for instructional purposes, and (d) whether critical thinking should be considered a process or a set of skills (Beyer, 1985; Facione, 1984; R. H. Johnson, 1996; Perkins, Farady, & Bushey, 1991; Resnick, 1987). While a number of scholars have attempted to impose order on this "conceptual swamp" (Cuban, 1984, p. 686), no one has yet come up with a definition or theory that is accepted as definitive (for examples see Beyer, 1985; Ennis, 1987; Facione, 1990; Lewis & Smith, 1993; Marzano et al., 1988; Quellmalz, 1987).

One of the major stumbling blocks to consensus has rested in the grounding of various theories and models in two distinct disciplines relevant to this study: philosophy and psychology. Philosophers have tended to focus on the nature and quality of the products of critical thinking, for example analysis of arguments. Psychologists, on the other hand, have concentrated on the process of cognition, the components and operations used to address academic and practical

problems. Further, cognitive and developmental psychology have been based in empirical research, while philosophy has relied on logical reasoning to reach conclusions. While most theorists have continued to base their theories and definitions of critical thinking or higher order reasoning in one discipline or the other, some educators have noted the importance of drawing on both philosophy and psychology to develop a rigorous and encompassing theory of critical thinking and how to teach for it (Kuhn, 1992; Kurfiss, 1988; Marzano et al., 1988; Quellmalz, 1987; Weinstein, 1995).

  <u>Philosophy-based theories and definitions</u>. Critical thinking has been associated with philosophy since the time of Socrates. Its centrality in the current educational reform movement has been closely connected with the rise of informal logic as a separate specialization within the discipline of philosophy since the early 1970s. Informal logic is a branch of logic that concerns itself with interpretation, evaluation, and construction of arguments and argumentation used in natural language; informal logicians have tended to view critical thinking as a broader term that includes and draws upon the findings of informal logic but also benefits from other forms of logic as well as from competencies outside of the field (R. H. Johnson, 1996). Informal logic has contributed a rigorous theoretical foundation for critical thinking but one that is somewhat narrowly focused on reasoning and argumentation.

  While informal logic has served as a rallying point for developing and testing philosophy-based theories of critical thinking, philosophers have addressed other components of critical thinking as well. Various theories of

critical thinking certainly differ in important points, but they also reveal common concerns (Ennis, 1987; Lipman, 1988; McPeck, 1981; Paul, 1993; Siegel, 1988). R. H. Johnson (1996) notes their resemblances:

> a reflective skeptical or questioning attitude, a sensitivity to value- or ideology-laden assumptions, an insistence on appropriate supporting grounds before accepting disputable claims, an appreciation of the various criteria applicable to good reasoning and argument (whether general or subject dependent), skill and judgment in the analysis and evaluation of claims and arguments, and a disposition to be self-reflective, sensitive to one's own possible biases or assumptions. (p. 46)

Johnson's analysis reflects an emphasis in philosophy-based approaches to critical thinking on intellectual theories and skills taught by informal logic, but it also notes philosophers' concern for affective propensities to exercise those skills.

Richard Paul (1993), a philosopher whose work has been widely cited by scholars using both philosophical and cognitive approaches to critical thinking, developed the critical thinking model that will be used as the experimental treatment in this research. Paul's theory of critical thinking was founded on philosophical traditions and has generally been supportive of critical theorists based in informal logic, but his analysis has avoided most formal terminology and has reflected findings from other fields as well. Unlike most informal logicians, he has avoided taxonomies, explications of concepts and skills, and details of argument analysis. Much of Paul's writing has concerned reasoning about everyday issues or problems that cannot be contained within the knowledge

structure and content of a single academic domain. Paul has often referred to these ill-structured, multidisciplinary problems as multilogical issues.

Paul (1993) is also noted for the distinction he has made between "strong sense" critical thinking and "weak sense" critical thinking, reflecting a strong moral concern in his theory with pervasive bias and egocentric thinking. His concept of intellectual virtues has served to establish a line of demarcation between (a) sophistic or weak-sense thinkers, those who use or attempt to use thinking skills to defend vested interests and point out inadequacies in the reasoning of others rather than applying the same skills to their own arguments, and (b) true critical thinkers, those who strive to recognize and set aside their egocentric and ethnocentric biases, apply thinking skills to their own arguments, and seek truth or the morally preferred alternative. Thus self-criticism has been another focus of Paul's theory.

Paul has insisted that critical thinking can be defined in a number of different ways that should not be seen as mutually exclusive. Among his various definitions of critical thinking are "thinking about your thinking while you're thinking to make your thinking better" (Paul, 1993, p. 91), and,

> a unique kind of purposeful thinking in which the thinker systematically and habitually imposes criteria and intellectual standards upon the thinking, taking charge of the construction of thinking, guiding the construction of the thinking according to the standards, assessing the effectiveness of the thinking according to the purpose, the criteria, and the standards. (Paul, 1993, p. 21)

These definitions emphasize the metacognitive aspect of critical thinking, independent thinking, and the importance of learning to assess thinking (your own or someone else's) according to normative standards. He has viewed critical thinking as a means of combating the influences of the prejudices, unrecognized assumptions, and irrational habits that we all bring to an issue. His refusal to limit himself to one definition of critical thinking has reflected his interest in developing an inclusive concept of critical thinking, one that draws on insights from a variety of fields and perspectives.

Like many other philosophers, Paul has argued that critical thinking requires an integration of cognitive and affective domains. Content in any discipline should be viewed and taught as a mode of thinking (i.e., history as historical thinking, biology as biological thinking), and his model for critically thinking about a domain or a problem includes cognitive elements of reasoning, normative standards, and affective dispositions (Foundation for Critical Thinking, 1996). It consists of reasoning about a field of study, issue, document, problem, etc. according to eight "elements": purpose, question, information, concepts, assumptions, points of view, inferences, and implication. Further, Paul contends that the thinker must be guided by universal intellectual standards (e.g., clarity, precision, accuracy, relevance) regardless of the domain or issues under consideration. Appropriate dispositions or intellectual virtues (e.g., empathy, humility, integrity, perseverance, fairness) aid in overcoming the biases and unfounded assumptions people bring to a problem. Paul's model also advocates teaching students to assess their own thinking, whether expressed in reading,

writing, listening, or speaking, for someone incapable of assessing his own thinking cannot be considered a critical thinker. Socratic discussions provide an important component in encouraging students to examine their own background logic, allowing for intellectual give and take, and supporting interdisciplinary thinking. Appendix A contains additional information on Paul's model.

Both K-12 and post-secondary educators seem to find Paul's model useful. Many of Paul's publications are directed toward the elementary and secondary grades, and he and his colleagues have designed workbooks for various grade levels which include a variety of practical examples using his model even in the lower elementary grades. On the other hand, Paul often addresses his writings to university and college faculty, and his model appears to be equally appropriate for higher education. Paul's published research also shows the versatility of his approach to critical thinking. His most recent research projects include co-authoring a model for nationally assessing critical thinking (at middle school, high school, and post-secondary levels) commissioned by the U. S. Department of Education (Paul & Nosich, 1992) and a large scale study of college and university professors and teaching for critical thinking (Paul, Elder, & Bartell, 1997).

Paul's model seems particularly well-suited to teaching history because of its appropriateness for document analysis, argumentation, and ill-structured problems. It is a highly flexible, theoretically rich, and broadly applicable model, compatible with a variety of teaching styles since it requires specific application by individual instructors. Rather than substituting the teaching of thinking for the teaching of course content, it is an approach to teaching content in a more

thoughtful manner. It has the added advantages of being adaptable for use in a wide range of academic and real-world situations and is general enough for students to use in a variety of circumstances. Chapter III describes the application of Paul's model to history instruction as used in this study.

One limitation of this model may be that its general nature (applicable to any subject matter, any grade level, any issue or problem requiring reasoning) makes it more difficult to use than more highly structured programs accompanied by specific lesson plans. Using Paul's model successfully requires conceptual understanding, skills, and commitment on the part of its practitioners, and the model is probably impractical on a wide scale unless adequate training and support is provided to faculty and students. The researcher's training in the model is described in Chapter III, and the issue of professional development is discussed further in Chapter V.

Despite widespread citations of Paul's work in pedagogical literature (e.g., Avery, 1994; Corral-Verdugo, Frias-Armenta, & Corral-Verdugo, 1996; Marzano, 1993; Swartz, 1989; Newmann, 1990a; Steele, 1997; Tishman, Perkins, & Jay, 1995), hefty attendance at training seminars and a yearly conference, and widely disseminated training videos and print resources, this researcher has not located any empirical studies that have tested the application and effectiveness of Paul's model. The absence of controlled studies is not unusual among models for critical thinking, especially among those based in philosophy, a discipline that relies on careful reasoning over empirical research to establish validity. Nevertheless, it is

an issue of concern when considering the claims of a model that is so widely promoted and used.

Resnick (1987) has summarized the nature of the philosophical contribution to thinking skills as promoting *disciplined* thinking, a means of guarding humans against their natural tendencies toward ego- or ethnocentric thinking, toward accepting fallacies, and toward drawing inappropriate conclusions because it is less troublesome than the work involved in thinking through alternatives.

Psychology-based theories and definitions. In contrast to philosophers, psychologists have drawn their ideas about critical thinking largely from research in cognitive and developmental psychology and theories of intelligence (Bransford, Sherwood, & Sturdevant, 1987; Halpern, 1996; Sternberg, 1987). Cognitive and developmental psychologists have been more likely to connect critical thinking with problem solving than philosophers have been, considering critical thinking and problem solving as equivalent terms or one as a subset of the other. Halpern (1996), for example, has defined critical thinking as "thinking that is purposeful, reasoned, and goal directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions" (p. 5). While Halpern does use the term critical thinking, most cognitive-based theorists have preferred to use "thinking skills" (or, more narrowly, higher order thinking skills) rather than critical thinking as a generic term for the movement (Lewis & Smith, 1993; Sternberg, 1987). In general, psychologists have researched and emphasized skills involved in thinking

critically, often ignoring dispositions (inclinations, sensitivities, and values needed to be a good critical thinker) and standards (criteria for evaluating thinking). In spite of that general tendency, in recent years several noted psychologists have begun focusing on the importance of students' dispositions and have emphasized them in their models for critical thinking (Halpern, 1998; Perkins, Jay, & Tishman, 1993).

While Bloom (1956) and associates' classification of educational objectives for the cognitive domain has continued to serve as a foundation for some psychology-based classification systems and thinking skills programs (B.E. Johnson, 1994), more recent cognitive research has provided a rapidly expanding knowledge base for richer and more diverse models for critical thinking. Halpern (1996), King (1990, 1994), Sternberg (1987), and Tishman, Perkins, and Jay (1995), among others, have developed models for critical thinking based in their own and others' cognitive research.

Some cognitive researchers have focused their attention on examining internal representations of knowledge or schemata in experts and novices in various domains. In the past fifteen years, these expert-novice studies of underlying structure of cognitive skills and knowledge have increased our understanding of how problem solving processes change with increased knowledge and experience. In the early 1980s, this area of cognitive research focused on problem solving in well-structured domains such as physics (Chi, Feltovich, & Glaser, 1981). More recently, the discipline of history has become a field of interest for expert-novice studies by cognitive scientists (Perfetti, Britt, &

Georgi, 1995; Rouet, Britt, Mason, & Perfetti, 1996; Wineburg, 1991a). Research

on expert and novice thinking has elucidated domain-specific characteristics of

critical thinking and has also helped clarify instructional goals such as helping

students to understand and to use disciplinary conventions and patterns of

thinking. For example, Wineburg (1991a) found evidence of three main

heuristics, rules that guide search but do not guarantee results, used by expert

historians to interpret historical documents. They are sourcing, checking the

source of the document before reading the body of the text; contextualization,

identifying the time and place of the text; and corroboration, comparing

information from various texts. Researchers have also tested methods designed to

help students develop domain-specific critical thinking skills like those used by

experts, but findings must be considered preliminary as yet, at least in history

(Perfetti, Britt, & Georgi, 1995; Rouet, Britt, Mason, & Perfetti, 1996). Thus, in

history as in other fields, expert-novice studies have made explicit some of the

skills and attitudes that characterize thinking like an expert, and they have also

pointed out some of the difficulties instructors face in helping students to become

critical thinkers on a variety of academic and everyday issues.

Developmental psychologists have also contributed to our understanding

of teaching for critical thinking. Perry's (1970) study of intellectual development

in male undergraduates was followed and refined by studies that examined the

intellectual development of women and minorities (Belenky, Clinchy,

Goldberger, & Tarule, 1986; Baxter-Magolda, 1992; Helms, 1990). This body of

research has provided an informative view of the various developmental

difficulties students may face in learning to think critically. While the stages or

positions described by different researchers have been variously labeled and

categorized, Kurfiss (1988) has organized them into four major categories of the

ways in which students view the nature of knowledge and respond to tasks

requiring critical thinking:

       1. Dualism/received knowledge, a position that views knowledge as a

collection of absolute facts, authorities as having the answers or being able to

determine the answers, and the instructor's role as providing those answers for

students;

       2. Multiplicity/subjective knowledge, a position that recognizes the

existence of doubts and uncertainties, at least in some areas, and concludes that no

absolutes exist, that knowledge is a matter of opinion or intuition, and that

everyone's opinion is equally valid;

       3. Relativism/procedural knowledge, a position that recognizes that

opinions differ in quality, and "truth" in a given domain should be based on

evidence and examining alternatives according to disciplinary standards;

       4. Commitment in relativism/constructed knowing, recognition of the

importance of commitment to beliefs, values, and decisions based on

understanding, evidence, and careful thought.

       Baxter-Magolda (1992) used a research design similar to Perry's (1970),

but she studied a roughly equal number of men and women, following students

through college into post-college experiences. Her findings suggest percentages

for the number of students who might fall into each category. Absolute knowing

(dualism above) was prevalent among freshmen (68%), decreasing to 2% among seniors. Transitional knowing (multiplicity/subjective knowledge) was characteristic of 32% of freshmen and 80% of seniors. Independent knowing, Baxter-Magolda's conception of a position similar to relativism described above, was rare among college students, found in only 16% of college seniors but jumping to 57% in the year following graduation from college. Her final position, contextual knowing, values thinking through problems and integrating and applying knowledge in context in the light of evidence. Contextual knowing was found in 12% of her participants, but not until the year following graduation.

These studies into students' epistemologies have proven valuable for teaching for critical thinking in that they have provided instructors with empirical evidence that students entering a course are likely to have attained varying levels of intellectual development and suggest that some students may resist efforts to teach for critical thinking due to confusion about what the teacher wants or even annoyance at not being given the right answers (Cross & Steadman, 1996). Further, research has suggested that having a variety of intellectual positions within a class can be advantageous when students hear other peoples' reasoning about ill-structured or multilogical problems and thus experience cognitive disequilibrium, leading to further intellectual development. At the same time these studies have tempered hopes that models can be developed that produce rapid and substantial change in students' abilities to think critically. They have found that students' intellectual positions develop over time, and that cognitive growth is a

gradual and cumulative process. They indicate that general critical thinking abilities are unlikely to advance noticeably over a 15-week semester.

Consensus among developmentalists seems to be that instruction should challenge students with assignments that require thinking at a higher level or position than most students have reached, while recognizing and providing support for the difficulties many students face in dealing with challenges to their cognitive positions.

Attempts at consensus. Disciplinary paradigms and protectionism, along with other factors, have resulted in limited cross-fertilization among scholars interested in critical thinking. Yet some scholars from different disciplines have cited each others' research and have attended each others' conferences (Halpern, 1993; Paul, 1993; Perkins, 1989). Lists of skills and dispositions drawn up by various philosophers and psychologists have reflected considerable overlap (cf. Ennis, 1987; Facione, 1990; Halpern, 1998; B. E. Johnson, 1994; Perkins, Jay, & Tishman, 1993; Quellmalz, 1987), and several recent attempts to synthesize contributions of psychology and philosophy to critical thinking have appeared in the published literature (Facione, 1984; Lewis & Smith, 1993; B. E. Johnson, 1994). Paul, for example (1993), has called for integrating insights of philosophers, psychologists, and other theorists and researchers in a comprehensive theory of critical thinking. He and his colleague Linda Elder, an educational psychologist, have recently introduced a stage theory of critical thinking development that draws on both developmental psychology and philosophical approaches to critical thinking (Paul & Elder, 1998).

Probably the best known broad-based systematic inquiry into the state of critical thinking was set in motion by the American Philosophical Association in an attempt to achieve a consensus of opinions by a panel of experts in critical thinking for the purposes of educational instruction and assessment (Facione, 1990). Forty-six experts, drawn from various disciplines, participated in the multi-year qualitative research project. About half (52%) of the participants were philosophers, and the rest were affiliated with education (22%), the social sciences including psychology (20%), and the physical sciences (6%). The report resulting from this investigation is commonly known in the critical thinking literature as the Delphi Report.

The Delphi Report identified critical thinking as "one among a family of closely related forms of higher-order thinking, along with, for example, problem-solving, decision making, and creative thinking" (Facione, 1990, p. 13). Facione, the organizing participant, has pointed out that these terms overlap conceptually and complexly, and the relationships among them have yet to be satisfactorily examined. The experts' consensus statement on critical thinking follows:

> We understand critical thinking to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. Critical thinking is essential as a tool of inquiry. As such, critical thinking is a liberating force in education and a powerful resource in one's personal and civic life. While not synonymous with good thinking, critical

thinking is a pervasive and self-rectifying human phenomenon. The ideal

critical thinker is habitually inquisitive, well-informed, trustful of reason,

open-minded, flexible, fair-minded in evaluation, honest in facing

personal biases, prudent in making judgments, willing to reconsider, clear

about issues, orderly in complex matters, diligent in seeking relevant

information, reasonable in the selection of criteria, focused in inquiry, and

persistent in seeking results which are as precise as the subject and the

circumstances of inquiry permit. Thus, educating good critical thinkers

means working toward this ideal. It combines developing critical thinking

skills with nurturing those dispositions which consistently yield useful

insights and which are the basis of a rational and democratic society.

(Facione, 1990)

This statement includes skills in both cognitive and affective domains. Core

cognitive skills (not including sub-skills) are interpretation, analysis, evaluation,

inference, explanation, and self-regulation. Affective dispositions are included in

the statement above and are discussed extensively in the report. Thus the Delphi

experts were able to reach consensus on a broadly inclusive definition of critical

thinking that included both cognitive skills and affective dispositions, but they

remained deeply divided on the issues of whether or not critical thinking includes

a normative dimension, as Paul has insisted in his analysis.

Like the Delphi experts, many other scholars have viewed higher order

thinking as an umbrella term that includes critical thinking, problem solving, and

decision making. While related to and sharing overlapping skills with problem

solving, critical thinking focuses on reasoning, argumentation, and judgment about ill-structured problems. Critical thinking includes skills of interpretation, analysis, evaluation, inference, explanation, and self-regulation. It also includes affective dispositions. The Delphi consensus statement is used as the definition of critical thinking in this study, with the addition of the intellectual standards recognized by Paul (Foundation for Critical Thinking, 1996).

Teaching for critical thinking

Until recently, it was generally assumed that students who attended college would develop critical thinking skills by attending classes, by listening to lectures and participating in class discussions, and by taking tests and completing regular course assignments. Several studies, however, have indicated that improving students' thinking requires more explicit teaching of critical thinking skills (Bangert-Drowns & Bankert, 1990; Halpern, 1998; Keeley, Browne, & Kreutzer, 1982; Perkins, 1989; Quellmalz, 1989; Underbakke, Borg, & Peterson, 1993). Yet research findings on the most effective instructional methods for improving students' critical thinking abilities have been inconclusive. McMillan (1987) reviewed 27 studies that investigated the effect of various courses and programs on critical thinking abilities among college students, and he found that while results have failed to support the use of specific instructional or course conditions to enhance critical thinking, they did support the conclusion that college attendance improves critical thinking. McMillan has cautioned against generalizing these findings to all methods or courses, citing weak research designs, a lack of good instrumentation appropriate to the interventions being

evaluated, and lack of a common definition and theory of critical thinking. Halpern (1993) has suggested that available assessment instruments may contribute to the problem of determining the effectiveness of various models for critical thinking. She has argued that assessment instruments must be made more sensitive in order to measure subtle increases in critical thinking skills and dispositions. Clearly, more research is needed to determine which educational experiences yield the greatest gains in critical thinking.

The revival of attention to critical thinking, along with an increasing interest in developing higher order thinking skills for all students at all levels of ability and education, has led to several different approaches to teaching critical thinking skills. One has been the development of specialized critical thinking courses (Browne & Keeley, 1994; Ennis, 1996; McPeck, 1981). This strategy has been widely used at the post-secondary level, especially in states such as California where the teaching and assessment of critical thinking skills is a state-wide requirement. A second approach has concentrated on discipline specific efforts to enhance students' abilities to think critically. Specialized journals in every field address teaching issues, including articles on enhancing domain-specific critical thinking skills. In history, The History Teacher, the "Teaching" column in Perspectives, and the OAH Magazine of History have provided widely read suggestions for instructional improvement, including suggestions and models for teaching for critical thinking in history. Another instructional strategy avoids specific models and plans while emphasizing the development of a classroom environment conducive to critical thinking, including in depth coverage of issues,

challenging questions and tasks given to students, and emphasis on reasons and evidence to support oral or written statements (Newmann, 1990a, 1990b, 1991).

In addition to the three approaches just described, an additional educational design has involved strategies or models to incorporate critical thinking across the curriculum (Adler, 1982; Foundation for Critical Thinking, 1996; King, 1990, 1994; Paul, 1993; Tishman, Perkins, & Jay, 1995; Sternberg, 1987; Swartz, 1991). One such effort, Richard Paul's model for critical thinking (Foundation for Critical Thinking, 1996; Paul, 1993), will be used as the experimental treatment in this study.

Clearly, diverse models and methods exist to help students improve their critical thinking abilities. While each has its proponents, little empirical research has been conducted to determine if one approach works better than another in improving students' critical thinking skills and dispositions.

Assessment of Critical Thinking

Assessment remains a major concern in developing programs to enhance students' critical thinking skills. Until a concept can be defined and assessed, adequate models for teaching are difficult to develop. Despite the lack of a comprehensive theory of critical thinking, varied efforts have been made to develop assessment tools. Three main approaches to assessing critical thinking have commonly been used: (a) commercially available general knowledge standardized tests, (b) researcher or instructor designed assessments that attempt to capture aspects of critical thinking more directly related to the purposes of the research project or subject of instruction, and (c) teaching students to assess their

own thinking. Each of these will be discussed with reference to its applicability to this study.

Commercially available standardized general critical thinking tests (eg. California Critical Thinking Skills Test, the Cornell Critical Thinking Tests, and the Watson-Glaser Critical Thinking Appraisal [Murphy, Conoley, & Impara, 1994]) have typically relied on multiple choice responses that test major aspects of critical thinking, including interpretation, analysis, inference, recognition of assumptions, assessing credibility, and detecting fallacies in reasoning. None have claimed to test for all aspects of critical thinking. These instruments have been carefully developed and tested for reliability and validity, and all have been widely used as measures for testing people's ability to think critically (Facione, 1986). Their use as assessment instruments is facilitated by their ease of grading (machine scoring) and has allowed comparisons among research projects using various models of teaching for critical thinking. On the other hand, while they test how well a student reasons from written material, they cannot assess whether students are able to generate clear, well-supported written or oral arguments, whether they can solve open-ended problems, or whether they have developed dispositions to use critical thinking skills when appropriate. Some researchers have suggested that multiple-choice tests are not valid indicators of critical thinking ability because test-takers are not free to determine their own questions or apply their own evaluative criteria (Keeley & Browne, 1986).

Some researchers have advocated using student-generated responses, including essays, to test adequately for critical thinking (Browne & Keeley, 1988;

Norris & Ennis, 1989; Paul & Nosich, 1992). Several general knowledge standardized essay tests for critical thinking have been developed as alternatives to multiple-choice formats in attempts to assess students' abilities to generate arguments and to capture the open-ended problem solving nature of critical thinking. The Ennis-Weir Critical Thinking Essay Test (Ennis & Weir, 1985), the best-known and most widely used example, requires students to read an essay on an everyday issue (overnight parking on a city street) containing numerous reasoning errors and to construct their own response. This standardized, commercially available essay test of general critical thinking ability provides several advantages over multiple choice tests or instructor-developed essay tests, including student-generated responses, carefully established validity and reliability, and national recognition. On the other hand, while standardized essay tests have included suggested standards and criteria for grading essays, the time and cost involved in grading open-ended assessments and the expertise required to grade them reliably has limited their use.

Other approaches to having students provide reasons for their responses and/or generate their own responses on commercial standardized general tests of critical thinking are being studied as well. Norris and Ennis (1989) have argued that a student's *reasons* for a particular answer must be considered, and they have proposed follow-up multiple-choice questions that probe student reasoning. Norris (1991) has suggested the use of verbal reports of thinking to assess multiple-choice responses. Paul and Nosich (1992) have argued for the inclusion of multiple-rating items that allow students to rank, from a number of possible

choices, those reasons that are more correct. They have further suggested

constructing test items so that a list of possible answers could refer to any number

of independent test items, and individual answers could be used several times or

not at all. These strategies would eliminate guessing as a factor in test scores.

While various additions to critical thinking assessments are being tested by these

and other researchers, standardized critical thinking tests that include these

enhancements are not yet available commercially.

Recent efforts have addressed the issue of critical thinking dispositions in

the form of a standardized commercially available test. Dispositions (otherwise

referred to as attitudes or intellectual traits) have been variously considered as an

integral part of critical thinking or as a separate but overlapping concept. The

Ennis-Weir Critical Thinking Essay Test tests for some critical thinking

dispositions in combination with testing for reasoning ability (Norris & Ennis,

1989; Taube, 1997), but attention to testing for critical thinking dispositions

separately from critical thinking skills is relatively new. Halpern (1993) has

pointed out that a quality assessment must test both a student's critical thinking

skills and whether they can use those skills without being told to do so. The

California Critical Thinking Dispositions Inventory, based on the consensus

theoretical model and dispositions enumerated by the Delphi Report experts, tests

for seven subsets of critical thinking dispositions using a six-point Likert scale

(Facione & Facione, 1992).

Each of the commercially available critical thinking tests is limited in its

ability to adequately assess changes in students' critical thinking abilities, but

their careful development, standardized scoring, and general use make them good candidates for use in educational research projects.

A second approach to assessing critical thinking is researcher or instructor developed tests. Norris and Ennis (1989) have provided examples and criteria for instructors interested in developing assessment techniques for such purposes as testing domain-specific critical thinking, testing for transfer, evaluating a critical thinking program, formative evaluations, or determining grades. While teacher-made tests can and should be used within the classroom to assess critical thinking, their use in educational research projects examining the effectiveness of various methods or models to teach for critical thinking has important limitations. Instruments designed for a specific experimental method or model for critical thinking may best capture its strengths, but the resulting variety of instruments and assessment techniques has led to difficulties comparing the results of educational studies.

Perhaps the most appropriate way to assess students' critical thinking abilities is to teach them to assess their own thinking. Paul has written extensively on teaching students to assess their own work, and he has argued that to the extent that students need feedback from instructors, they have not achieved a high level of critical thinking (Foundation for Critical Thinking, 1996). Angelo and Cross (1993) have also emphasized the importance of student self-assessment techniques. This approach seems to comprise an integral part of teaching for critical thinking and needs to be addressed more broadly by researchers. While highly appropriate for classroom use, however, it requires a deep understanding of

critical thinking and a tremendous commitment from both the instructor and the students. Further, this method of assessment, for many obvious reasons, does not meet the requirements of rigorous educational research.

Recent attention to critical thinking demands that current assessment practices be revised, discarded, or replaced. Scholars have continued to work to develop reliable, valid assessments that test the total construct while providing efficiency in grading. At this time, no one approach is best, and each has its limitations and merits. This study will use the Ennis-Weir to test general critical thinking ability due to its generative format and standardized scoring form. In addition, the CCTDI will be used to test for critical thinking dispositions.

<u>Critical Thinking and Age</u>

Researchers have demonstrated that older students differ from traditional-age students in a variety of ways, including approaches to studying, attitudes towards school, and assertiveness (Eison & Moore, 1980; Gibbs, 1994; King & Kitchener, 1994; Mezirow and Associates, 1990). The question of whether or not these differences also extend to reasoning patterns and critical thinking abilities remains unresolved. Perry's (1970) model of intellectual and moral development, later modified by Belenky et al. (1986) and other studies (King & Kitchener, 1994; Kurfiss, 1988; Baxter-Magolda, 1992), have established that peoples' conceptions of the nature of knowledge and their understanding of themselves as knowers, thinkers, and reasoners generally develops over time. Developmentalists have differed, however, on the age ranges for each stage or position of intellectual development, on whether people develop progressively or in a fluid, back and

forth way, and on the impact of plateaus or even reversals in intellectual development.

Some adult education theorists have argued that critical reflection, an aspect of critical thinking that functions to enable people to examine rationally the assumptions and values by which they justify their beliefs, takes place only in late adolescence or adulthood (Brookfield, 1987; Garrison, 1991; Mezirow and Associates, 1990). They have posited that the ability to reflect critically happens not merely as a function of physical maturity but because older students are more likely to have developed further in their reasoning and reflective capacity due to challenging experiences. According to these theorists, adult learners may be more open to different viewpoints and more willing to make reasoned judgments based on defined standards.

In contrast to the view that there is a difference in intellectual development and critical reflection between adult learners and traditional-age college students, current research on reasoning and argumentation has not found a difference in peoples' abilities to reason critically by age. King and Kitchener (1994) have reviewed a number of studies that examined students' reasoning about ill-structured problems using the Reflective Judgment Model. Their research has indicated that, in contrast to differences found on other educationally relevant dimensions, adult students do not appear to be dramatically different from their younger counterparts in terms of their reflective thinking, including their epistemic assumptions and the way they justify their beliefs in the face of uncertainty. Kuhn (1992), in her study of argumentive reasoning ability on current

social issues, has also concluded that reasoning skills do not differ systematically as a function of age after about ninth grade. Her study found no further development in argumentative reasoning skill between early adolescence and adulthood. Kuhn's findings have supported developmental theories that thinking about one's own thought and beliefs does not occur until late childhood or early adolescence and that early adolescence is that age at which systematic change can be observed. Perkins (1985), who has investigated informal reasoning other than reflective judgement, has also found that age had no significant impact on reasoning performance. King and Kitchener, Kuhn, and Perkins have all found that years of formal education is a more powerful predictor of reflective thinking and the quality and complexity of argument construction than age or any other demographic variable.

The question of whether or not there is a difference in intellectual development and level of critical thinking abilities between adult learners and traditional-age college students has not been settled. We still know little about the way thinking skills change over the adult life span. Contrasting findings and theories indicate that more research needs to be done.

Critical Thinking and Gender

Researchers have demonstrated that women have different "ways of knowing" from men (Belenky, Clinchy, Goldberger,& Tarule, 1986; Clinchy, 1994; Miller, Finley, & McKinley, 1990). As with age differences, the extension of gender differences to critical thinking and its component constructs such as argument analysis and generation and reflective judgment has remained a topic of

debate. King and Kitchener's (1994) research and summary of findings on the

Reflective Judgment Model found somewhat mixed results. Of the 17 studies

reviewed, 6 indicated that males scored higher on the Reflective Judgment

Instrument and the rest reported no difference or, in 1 study, a class by gender

interaction. King and Kitchener have suggested that reported differences may be

due to a variety of factors in addition to gender, including differences in academic

aptitude or rates of maturation. Baxter-Magolda (1992) has concluded from her

research that gender differences in students' reasoning patterns and ways they

justify their thoughts are fluid, a continuum with numerous variations and

combinations rather that a dichotomy between female and male students. No

single reasoning pattern was used exclusively by women or men, nor did students,

male or female, limit themselves to one reasoning pattern over time or between

different domains. Further, she has found more similarities than differences in

men's and women's ways of knowing, and she has also determined that different

reasoning patterns led to equally complex ways of viewing the world. Kuhn's

(1992) data supported Baxter-Magolda's findings; she has concluded that

argumentive reasoning ability does not differ systematically as a function of sex.

No evidence from her investigation has suggested that one sex is any more

disposed or competent to engage in argumentative thinking than the other.

The question of gender differences in critical thinking remains a topic of

controversy among scholars. Research findings have not yet resolved this issue.

<u>Transfer of Learning</u>

       Transfer of learning refers to the extent to which a student can apply what is learned in instruction to a new situation, usually to a real-world context (Clark & Voogel, 1985). Transfer of learning for critical thinking, then, means that students who have been trained in skills, standards, and dispositions of critical thinking in one domain should be better thinkers in a variety of academic subjects and in real-world contexts such as recognizing unrealistic campaign promises made by a political candidate or making well-reasoned personal decisions.

       While education aims at transfer of learning to similar contexts in other academic courses and/or real world situations, the question of how and under what conditions transfer occurs has remained a source of academic disagreement. Some studies have shown that small changes in content or approach will result in failure of students to apply what they've been taught (Detterman & Sternberg, 1993; Sternberg, 1987). In contrast, Halpern's (1993) review of studies using seven different forms of outcome evaluations for critical thinking courses concluded that thinking skills and dispositions are transferable to a variety of situations. When critical thinking instruction is done well, students become more skilled thinkers in general, and they are more likely to use their skills in new situations. Yet she also has pointed out that while we can assert that training in critical thinking results in students who think better, we still know relatively little about what are the most effective components of separate courses designed to improve student thinking.

Some scholars have argued that general critical thinking abilities exist that can be taught in separate critical thinking courses or in a variety of fields (Ennis, 1992; Halpern, 1993; Paul, 1993; Perkins & Salomon, 1989), but most cognitive scientists hold that since background knowledge is essential for thinking in a given domain, simple transfer of critical thinking dispositions and abilities from one domain to another is unlikely unless there is practice in a variety of domains and instruction is focused on transfer (Ennis, 1992; Glaser, 1984; Resnick, 1987). The problem of transfer to different contexts leads some scholars to advocate teaching for thinking through content in specific subjects rather than in separate courses (McPeck, 1981; Perkins, 1987).

While the generalizability issue has not been settled, scholars generally have agreed that for transfer of critical thinking skills to take place, instructors must teach critical thinking skills explicitly, draw connections and applications for students, emphasize self-monitoring, and provide varied practice (Beyer, 1985; Halpern, 1998; Keeley, Browne, & Kreutzer, 1982; Perkins & Grotzer, 1997; Quellmalz, 1987; Sternberg & Frensch, 1993; Swartz, 1991).

<u>Critical Thinking and History</u>

Although some researchers have viewed critical thinking as a domain-specific ability (McPeck, 1981), there are no definitions of critical thinking known to this researcher in the specific context of history learning. Nevertheless, many abilities are common to concepts of both critical thinking and historical thinking, including defining abstractions precisely, defining a problem, developing hypotheses about cause and effect, speculating about and assessing

alternative arguments, analyzing relationships among facts, drawing inferences, looking critically at the nature of sources, marshaling evidence, interpreting and integrating information from different sources, constructing and arguing a case to explain the evidence, and judging the adequacy of an argument (Greene, 1994; Leinhardt, Stainton, Virji, & Odoroff, 1994; Mayer, 1998; Spoehr & Spoehr, 1994). Affective dispositions such as open-mindedness and diligence in seeking relevant information are also necessary to both historical thinking and critical thinking.

While historians must of necessity be good critical thinkers in order to do publishable research, this fact does not necessarily translate into teaching for critical thinking or teaching students to think historically, even at the post-secondary level. Instead of modeling the kind of thinking they do as historians or teaching students the methods of history, instructors often fall back on the way they were taught, typically by lecture (McDiarmid, 1994). Increasingly, however, historians are being called on to vary their teaching methods and to promote active student participation in the learning process, including teaching for critical thinking (Reed, 1996).

Recent pressures to develop students' critical thinking abilities in history courses have followed both from general research in cognition and from studies of learning in history. While past decades have seen a considerable amount of research on student learning in mathematics and the physical sciences, history instruction and learning has just recently emerged as an important field of educational research. The reasons for earlier emphases on math and science may

be due to governmental interest in the advancement of technology or the relative

ease of investigations in math and science (Voss & Carretero, 1994) compared to

the challenges produced by "multilayered, self-reflective, interpretive, dialectical

disciplines such as history" (Leinhardt, Beck, & Stainton, 1994, p. x).

Nevertheless, the past decade has seen a mushrooming of research on learning in

history and other ill-structured domains.

In one of the most valuable studies for history learning since the early

1990s, Wineburg (1991a, 1991b, 1994) examined the problem of expert versus

novice learning, finding that expert historians, even when dealing with documents

out of field, approach a set of documents quite differently from the way students

do. Experts are more likely to question the source, refer from one source to

another, and construct theoretical models that they test and alter in response to

evidence. Wineburg's research has elucidated the gap between novice and expert

thinking in history, a necessary step in determining how to help students improve

their thinking.

Just as historians conduct their research with primary source documents

and build their hypotheses based on analysis of multiple primary documents,

much of what students learn about history also comes from reading texts.

Research into the textual components of history, including such topics as

perspective-taking, interpretation, and rhetorical layerings, has provided new

insights for student learning (Leinhardt, Beck, et al., 1994). Several studies have

examined text analysis, the focus of this investigation. Perfetti, Britt, and Georgi

(1995) have tested how students process multiple source documents on the same

issue; they found that students are sensitive to content differences as well as to biased perspectives. The same study has concluded that using multiple documents containing varying viewpoints about the same issue can be a valuable activity as part of a history curriculum if appropriate study strategies are taught. They have also noted that further work is needed to determine the most effective instructional strategies (Rouet, Britt, Mason, & Perfetti, 1996).

Another cognitive approach to learning in history is the development of graphic organizers that attempt to model expert learning for students to use until they develop their own schema for thinking and understanding. Miller and Stearns (1995) and Leinhardt, Stainton, et al. (1994) have developed or examined the use of graphic organizers in helping students think about history, but results are incomplete.

These recent studies have added to our knowledge of how students, particularly college students, learn and reason in history. They have informed research in testing the effectiveness of various methods of teaching students to think historically and to think critically about history.

Summary of Literature

Although efforts toward consensus have been made, and widely accepted definitions of critical thinking exist, experts have not uniformly agreed on a definition of critical thinking. There is enough agreement, nevertheless, to pursue research on strategies for developing critical thinking skills and dispositions. A variety of approaches and models to teaching critical thinking have been developed, but few of them have been tested empirically by neutral scholars. Lack

of consensus on the definition of critical thinking has also hampered efforts to develop instruments for assessing critical thinking. Several standardized tests for critical thinking exist, but they typically have failed to account for subtle aspects of critical thinking. Essay tests and short open-ended responses have countered many of the concerns about multiple choice instruments, although these remain difficult to grade reliably.

Various researchers have examined the effects of age and gender on critical thinking abilities, but results have been found to be contradictory and therefore inconclusive. The degree to which teaching for critical thinking within specific domains transfers to other fields and to everyday reasoning has remained a source of debate as well, but being explicit and providing application seems to make the likelihood of transfer more likely.

In history, critical thinking skills are often developed through the use of primary source documents, but the research literature examining teaching for critical thinking in history is limited. More studies are needed to determine which strategies aid in developing students' abilities to think critically in history. More research is also needed on explicit means of instructing for critical thinking so that transfer of learning will occur.

Based on the literature review, Paul's model appeared to be the best choice for integrating a rich and practical concept of critical thinking into history courses. It was solidly based in theory and drew on both philosophical and psychological approaches to critical thinking. It lent itself readily to teaching students how to analyze primary source documents while being broadly

applicable to other types of documents, events, and phenomena. It had the further

advantage of focusing on critical thinking dispositions that help students improve

as historical thinkers (e.g., intellectual empathy, intellectual perseverance, and

fairmindedness) and as critical thinkers in general. The model provided universal

intellectual standards that guided students in evaluating other people's writing and

speaking and helped them assess their own thinking in history, in other academic

disciplines, and, indeed, in life. This researcher expected to see the following

results: Explicitly teaching Paul's model for critical thinking and providing

practice in using it to analyze primary source documents would produce higher

scores among research participants on tests of primary document analysis,

argument evaluation, and critical thinking dispositions than the more traditional

method of instruction used as a control.

CHAPTER III

METHOD

Chapter III overviews this study and is presented in six parts. The first part describes the participating institution. The second describes procedures for obtaining the subject sample and student participants. The third examines the assessment instruments used in the research study. The fourth part outlines the experimental design and data collection procedures used in the study. The fifth describes the specific instructional approach used as the experimental treatment and the sixth part identifies the procedures for data analysis. The chapter concludes with a summary of the methods.

In this study, students' critical thinking skills and dispositions in history were developed through explicit instruction in the analysis and interpretation of primary source documents. Community college students were initially tested at the beginning and then again at the end of a semester-long U.S. history course on their ability to analyze and synthesize historical documents, their ability to analyze a newspaper editorial on a current issue and write a response, and their dispositions toward critical thinking. Mastery of course content knowledge in history was tested as well. Age differences (students younger than 22 and 22 or

older) and gender differences in the application of critical thinking skills were also examined.

Institutional Setting

The study was conducted at a community college in central Florida that enrolled 5501 degree-seeking students on two campuses in the fall of 1997. The ethnic composition of degree-seeking students was approximately 79% white, 13% African American, 5% Latino American, 1% Asian American, less than 1% American Indian, and 3% non-resident aliens. Females comprised 62% of the degree-seeking students. Students ranged in age from 17 year-old high school students enrolled for dual credit to senior citizens, and approximately 44% of the students were under 22 years old. Compared to the other 27 community colleges in Florida, this college is of small to moderate size. Gender distribution is similar, with females comprising 60% of the students enrolled in Florida community colleges, and ethnic composition is similar as well (Report for the Florida Community College System, 1997; Student Data Base, 1997-1998, Fall).

This community college was selected for this study because the researcher was an adjunct faculty member in the department of Arts, Letters, and Social Sciences and because the administration expressed willingness to participate in the study.

Research Participants

The accessible population for this study consisted of all students enrolled in U.S. History 1877 to the Present courses at a community college in central Florida. Although history is not a degree requirement at this community college,

most students in the AA degree programs take at least one history course to fulfill

social science requirements. Unless they have a particular interest in world

civilizations courses, most students (89% of the headcount) take one of two U.S.

history courses: U.S. History to 1877, or U.S. History 1877 to the Present

(Student Data Base, 1997-98, Fall).

Four intact sections of students in U.S. History 1877 to the Present

participated in this study. Students enrolled in specific sections according to

personal schedule preferences and thus could not be randomly assigned to a

particular section or treatment group. One section on each campus was randomly

assigned to the treatment condition, and one section on each campus was

randomly assigned to serve as the control condition. The result was two sections

that met during the day in the treatment condition, one on each campus, and one

day section and one evening section in the control group, one on each campus.

Although random assignments of participants to conditions would have been

preferred, this typically cannot be done in research studies involving

undergraduate students in higher education settings. The researcher anticipated

that there might be a difference in achievement levels of students due to age. For

this reason, age (under 22, 22 and over) was examined as an independent variable

in this study. Gender was also included as a design variable.

History courses are limited to a maximum class size of 35 students but are

frequently smaller. Total student enrollment in the four sections at the beginning

of the semester (following the end of the drop-add period) was 64. All students

consented to participate in the study. Based on this instructor's prior experience in

teaching U.S. history courses over the past six years, it was anticipated that approximately 20% of the students would either drop the course or be dropped for non-attendance prior to the midpoint in the semester (the cutoff date for withdrawals). A few additional students typically quit attending following the drop date, thus reducing class sizes further. During the semester of the research study, 11 of the original 64 students (17%) who had been enrolled at the beginning of the semester in the four sections included in the research study failed to complete the course, leaving a total of $\underline{N}$= 53. In the two experimental sections, 19% (7 of 37 students) failed to complete the course, and in the two control sections, 15% (4 of 27 students) failed to complete the course. These percentages are consistent with a 21% failure to complete rate (26 of 126 students) in sections of U.S. History 1877 to the Present taught by other instructors during the same semester.

Students report dropping courses due to a variety of factors including personal problems, changes in work schedules, course overloads, and student unwillingness or inability to do the work required. Since participants in this study who dropped may have done so at least partly as a result of the instructional method, each student who withdrew from or stopped attending classes in a section participating in this study was personally contacted by the instructor to determine his or her reasons for dropping. Students were told that the researcher was trying to assess why students drop courses so as to better serve future students, and they were asked to answer honestly. A list of nine possible reasons for withdrawal or non-attendance was read to each student. (See Appendix C for the Drop Survey

and a summary of students' responses). Most students cited health problems, work schedule conflicts, or excessive course loads as the major reason for ending their participation in the course. Students in the experimental group who initially responded with any reason relating to their course load or to U.S. History 1877 to the Present in particular were asked if source reading assignments had affected their decisions. Only one student indicated that source reading assignments had influenced her decision to drop the course.

Because the independent variable of explicit instruction in using Paul's model for critical thinking was taught through in-class instruction, excessive absenteeism was a logical concern. The decision was made to eliminate anyone absent more than 25% of course hours from participation in the research study. Only one student (experimental group) met this criterion. The student was absent 14 of 47 class hours (30%) and was therefore dropped from the data analyses that follow.

Students in all sections filled out a demographic survey, providing further information about the research participants (Appendix D). Sixty-nine percent of the sample ($\underline{n}$ = 36) were under 22 years old, and 31% ($\underline{n}$ = 16) were 22 or over. Females constituted 65% of the sample ($\underline{n}$ = 34), and 35 % ($\underline{n}$ =18) were male. Among research participants, gender percentages were similar to those for the student population as a whole at the participating institution (65% female in the sample, 62% female at the college). The participant sample was younger than the population at the participating institution (69% of participants were under 22, while 44% of students at the college were under 22). The racial/ethnic breakdown

of research participants was roughly similar to that of the college, with white non-Hispanics composing 83% of the research participants and 79% of the student population at the participating institution. The experimental group had a slightly higher percentage of females (69%) when compared with the control group (61%). The experimental group also had more students under 22 (72%) than the control group (65%). The control group had a higher percentage of minority students (22%) compared to the experimental group (14%). Additional demographic information by group is found in Table 1 and in Appendix D. Using four intact classes and combining two sections (one on each campus) for purposes of statistical analysis provided $\underline{n} = 30$ in the experimental group and $\underline{n} = 23$ in the control group. One student in the experimental group was later eliminated from the study due to the excessive absences policy, leaving $\underline{n} = 29$ in the experimental group and $\underline{n} = 23$ in the control group.

Instruments

     Results obtained with four instruments were compared in this study (a Documents Based Question from an Advanced Placement Examination for United States History, the Ennis-Weir Critical Thinking Essay Test, the California Critical Thinking Dispositions Inventory, and a History Content Exam). The instruments tested students' abilities to interpret primary documents, skills in formulating an argument analysis of an everyday issue, dispositions toward critical thinking, and knowledge of historical content. The instruments testing students' skills in argument analysis of an everyday issue, dispositions toward critical thinking, and knowledge of historical content were given both at the

Table 1.

Demographic Characteristics of Participants

	Experimental (n = 29)		Control (n = 23)		Sample (n = 52)	
	No.	Percent	No.	Percent	No.	Percent
Age						
Under 22	21	72.41	15	65.21	36	69.23
22 or older	8	27.58	8	34.78	16	30.77
Gender						
Female	20	68.97	14	60.87	34	65.38
Male	9	31.03	9	39.13	18	34.62
Ethnicity/Race						
Asian or Pacific Isl.	0	0	1	4.35	1	1.92
Black non-Hispanic	3	10.34	1	4.35	4	7.69
Hispanic American	1	3.45	3	13.04	4	7.69
White non-Hispanic	25	86.21	18	78.26	43	82.69

beginning of the semester (within the first two weeks) and again at the end of the

semester. The instrument testing students' abilities to interpret primary documents

was given at the end of the semester as part of the final exam for the course. The

instruments selected were chosen from an extensive literature review as those best

measuring interpretation of primary source readings in history, skill in argument analysis, critical thinking dispositions, and knowledge of content of U. S. History 1877 to the Present. The researcher determined that using standardized, commercially available instruments, or selecting questions from such instruments, would contribute favorably to the generalizability of the findings of this investigation. Nevertheless, using selected questions from an instrument may affect its established reliability and validity, and problems also exist with reliably grading free-response answers. A copy of the History Content Exam used in this study can be found in Appendix E.

In addition to the above-mentioned four instruments, the researcher also collected data using a demographic survey, the "Student Perception of Instruction" form provided by the institution, and interviews with randomly selected students. The demographic survey developed by the researcher was used to collect data on the variables of gender and age and to provide descriptive information about the research participants. Information on consistency of instruction and student reactions to primary source reading assignments was obtained through "Student Perception of Instruction" surveys, a standard form provided by the participating institution and given to students in the middle of the semester. This form allows additional questions to be asked, and the researcher included four such questions relating to student reactions to primary source readings. The researcher conducted two sets of interviews with two randomly selected students from each of the four participating sections (n = 8) concerning their experiences completing document assignments and their understanding of

critical thinking. A copy of the Demographic Survey is in Appendix D and the "Student Perception of Instruction" survey is in Appendix B. Interview questions and transcriptions can be found in Appendix F.

      <u>Analysis and interpretation of primary source documents</u>. A section of the 1986 Advanced Placement Examination for United States History known as the DBQ was used to test the abilities of students to analyze primary source documents in history. Portions of disclosed former tests including Document Based Questions (DBQ) are available (Spoehr & Fraker, 1995), and the Educational Testing Service, developers of these examinations, granted this researcher permission to use a disclosed DBQ in this study. The DBQ portion of the test requires a free-response based on a set of brief readings and illustrations. The examinee is given time to study the documents and then is asked to answer a question in essay form. This portion of the exam takes approximately 50 minutes under ETS testing conditions. When students take the complete exam, their grade on the DBQ is combined with scores from a multiple-choice section and from a second free-response section; these three scores are combined to provide a student's total grade. In this study, students took the DBQ portion only, and they were allowed approximately 75 minutes to complete the essay.

      Based on the purposes and needs of this research project, the AP Exam for U. S. History was chosen to provide a standardized, content validated, and reliable instrument to assess students' abilities to interpret primary documents. Although using only one section of three from the total AP exam and allowing students additional time raises issues of test reliability and validity if individual scores are

to be used for placement in college-level history courses, in this study mean scores from experimental and control groups were used to assess significant differences in students' abilities to think historically. The DBQ was not used to evaluate student knowledge of history content for educational placement purposes. Thus, the content validity and reliability associated with using only one section of the AP Exam and/or allowing students more time than under ETS test conditions need not be questioned.

In the semester preceding the research study, the 1986 DBQ was given as a pretest and as a posttest to a very small sample of students ($\underline{n}$ = 7) to test its effectiveness in assessing students' abilities to think historically using source readings, to observe students' reactions to the instrument, and to help predict what might be expected in the principal study. Students were allowed 50 minutes to write the essay. These preliminary essays were scored by an experienced AP rater according to AP standards on a scale of 0-9. The researcher also rated each essay and compared results with the AP rater, thereby providing training for the researcher in using the DBQ scoring criteria. The pretest mean was 3.20 ($\underline{SD}$ = 1.62) and the posttest mean was 4.14 ($\underline{SD}$ = 1.57), a difference of .94 points. The difference was statistically significant, $\underline{t}$ (7) = 2.49, $\underline{p}$ < .05. Pretest-posttest reliability was .73. Based on students' negative reactions to the DBQ as a pretest (students experienced a high level of frustration since they were asked to write an essay that required skills and knowledge that they did not possess), the researcher decided to use the 1986 DBQ only as a posttest in the principal study.

Students were allowed 75 minutes to take the DBQ to give them additional time to read and analyze sources carefully.

In the present study, DBQ essays were scored by the researcher and by the same AP grader who worked with the researcher in obtaining the preliminary data with the instrument. Essays were scored blind: that is, they were identified by social security number only and were stacked in random order so that a paper could not be identified according to section or group. The raters used an adaptation of the holistic scoring guide provided by ETS to score the essays. The scoring guide highlighted specific requirements of the essay question and emphasized primary source analysis. Following current DBQ scoring guides, scores could range from 0-9. Since the researcher was most concerned with scoring accuracy, the following scoring procedure was used. The first fifteen essays served to evaluate the scoring criteria and to train the raters in using the criteria. Both raters had a copy of each essay. After reviewing the test material and scoring criteria, five exams were read and scored independently by each rater. Then, each essay was discussed thoroughly in light of the criteria on the scoring form, and a consensus score was assigned to each essay. The next ten essays were rated in the same way for training purposes. Following agreement on the scoring criteria, the remaining essays were scored more quickly and independently as follows. Each rater read and scored the next essay independently (in the same order for both raters), and scores were compared. In most instances, raters agreed, but if the raters disagreed at that point, the essay's strengths and weaknesses were examined more carefully according to established criteria. Support from the essay

was provided for a higher or lower score until consensus was reached within one point (on a 0-9 point scale). The two raters each used a separate scoring sheet, and an average score was determined for statistical analysis.

Argument analysis and general critical thinking ability. The Ennis-Weir Critical Thinking Essay Test (Ennis & Weir, 1985) was used to test students' ability to evaluate an argument and to generate a written argument in response. This instrument assesses students' abilities to respond to arguments as they occur naturally in discussion, disputation, and debate in the real world.

The test is composed of a one-page letter written to the editor of a newspaper urging the adoption of an ordinance that would prohibit overnight parking on public streets. The letter consists of eight numbered paragraphs. Test-takers develop a paragraph-by-paragraph analysis of the test-letter with the objective of writing a short essay supporting or refuting each argument in the letter as well as a summary paragraph (e.g. paragraph number nine) evaluating the argument presented. A scoring sheet is provided by the test developers containing criteria for scoring each of the nine paragraphs written in response to the letter; according to the scoring sheet, student scores can range from -9 to +29. Maximum time recommended for the test is 40 minutes.

Possible concerns with using the Ennis-Weir as a general test of critical thinking include issues of both reliability and validity. Reliability was initially established by having essays written by 27 college students midway through a college-level introductory informal logic course and 28 gifted eighth-grade students of English graded by two different graders. Interrater reliabilities of .86

and .82 respectively, were obtained; these are sufficiently high correlations for an essay test of this type. Other forms of reliability were not addressed by the test authors. The authors also claim content validity "in the old fashioned sense" (Ennis & Weir, 1985, p. 3), referring to the "judgment of experts." Construct validity seems most relevant for a general test of critical thinking, but the authors do not claim that the test measures a representative sample of all possible skills included in the concept of critical thinking. Further, the authors state that predictive and concurrent validity cannot be examined "since there is no outside criterion for the ability the test was designed to measure" (p. 3). As noted previously, lack of a widely accepted definition and/or theory of critical thinking continues to hinder the development of adequate assessment instruments and may have inhibited the authors in addressing construct and other types of validity.

Reviews of the Ennis-Weir have been generally favorable with some reservations. Tompkins (1989) considered it useful for testing for critical thinking ability and commended the authors for developing an "open-ended and content-specific test that allows students to respond to the arguments presented in the test in a variety of ways" (p. 291). She also noted the realistic nature of the test as a measure of critical thinking but criticized the paucity of validity and reliability data provided in the test manual. Werner (1991) pointed out that "in assessing both evaluative and productive aspects of critical thinking, the test . . . provides a . . . holistic and naturalistic picture of critical thinking skills" (p. 495). On the other hand, Werner found that the open-ended nature of the test contributed to a relatively subjective and time-consuming scoring process. Poteet (1989) noted its

limitations as a norm-referenced test but indicated support for its use as an "informal assessment . . . in the area of critical thinking" (p. 290).

The Ennis-Weir has been used successfully in a variety of situations (Davidson & Dunham, 1996; Hatcher, 1995; Taube, 1997; Unrau, 1991) and has received strong expert support. In a personal conversation (April 22, 1997), M. N. Browne, author of Asking the Right Questions (Browne & Keeley, 1994) and a member of the Delphi panel of experts (Facione, 1990), stated that he has used the Ennis-Weir test as a classroom exercise and supported its use by this researcher as a standardized, nationally-recognized test of general reasoning ability on an everyday issue. In his experience, the Ennis-Weir works well in a pretest/posttest design, although he noted that some students at the end of a semester long course devoted to developing critical thinking skills "see things more richly" than the Ennis-Weir is able to discriminate, indicating a possible ceiling effect.

D. L. Hatcher, Director of the Center for Critical Thinking at Baker University in Baldwin, Kansas, similarly reported using the Ennis-Weir for six years to assess the critical thinking abilities of all Baker students at three points in their college career: as entering freshmen, at the end of a year long critical reading and writing course, and at the end of their senior year (Hatcher, 1995; personal communication, May 13, 1997). Hatcher expressed satisfaction with the Ennis-Weir as an appropriate means of assessing and comparing general critical thinking and writing skills. Hatcher stated that Baker's best students score around 20 of a possible 29 points on the Ennis-Weir, indicating no problems with a ceiling effect.

He noted that raters need to be carefully trained and inter-rater reliability should be checked.

In spite of its limitations, the Ennis-Weir Critical Thinking Essay Test was determined to be the most acceptable option for testing students' abilities to evaluate an example of argumentation and to respond in argument form. In the semester preceding the research study, the researcher tested the Ennis-Weir in several courses at the participating institution. One section of U.S. History 1877 to the Present, one section of World Civilizations to 1500, and three sections of Teaching Diverse Populations took the instrument as a pretest ($\underline{N}$ = 113) and posttest ($\underline{N}$ = 93). All sections testing the use of the Ennis-Weir were taught by the researcher and received some training in Paul's model for critical thinking since the researcher was concurrently testing the use of the experimental model. This background study was used to train the raters, to estimate what changes in mean scores might be expected after a semester-long course incorporating critical thinking, and to determine if any revisions were needed in the instrument or the testing procedures. Each essay was scored by two raters, the researcher and an English instructor. Scoring procedures were discussed, then each rater scored the essays individually using the criteria on the score sheets and suggestions for scoring that were provided in the Ennis-Weir Test Manual. At several points in this process, both when pretests and posttests were being scored, the raters compared scoring results and reread, discussed, and rescored essays with differences of over three points (on a scale of –9 to +27). Both raters scored each essay, providing a mean score. Interrater reliability was .98 on the pretest and .96

on the posttest using the method described above. Pretest-posttest reliability was .63. Mean score on the pretest was 9.00 ($\underline{SD}$ = 8.46) and the mean on the posttest was 12.52 ($\underline{SD}$ = 7.29), an increase of 4.06 points. Differences pretest to posttest were significant, $\underline{t}$ (91) = 4.89, $\underline{p}$ < .0001. No significant differences were observed in the scores of day and evening sections.

For the present study, the researcher revised the grading procedure to maximize scoring accuracy. Essays were scored blind. Each was identified by social security number only, and essays were randomly stacked so that section and group (experimental, control) was unknown to the raters. Both raters scored each essay during a single scoring session. Raters scored five to eight essays individually and then compared scores. In the relatively few instances when differences in scores exceeded three points, the essay was reread, discussed, and rescored by each rater. Each rater kept an individual scoring sheet, providing an average score.

Critical thinking dispositions. The California Critical Thinking Dispositions Inventory (CCTDI; Facione & Facione, 1992) was developed to measure one's inclinations or dispositions toward critical thinking. It was created using a consensus definition of critical thinking produced by a panel of experts using Delphi procedures (Facione, 1990). It is comprised of 75 items to which students indicate their level of agreement or disagreement on a six-point Likert scale. It takes 15-20 minutes to complete. Items are divided among seven scales representing different dispositions of the critical thinker. These are truth-seeking, open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness, and

cognitive maturity. The maximum score for each scale is 60. According to the authors, a score lower than 40 indicates that the individual is weak in that disposition whereas someone who scores higher than 50 is strong in that disposition (Facione & Facione, 1992). The maximum total score possible on CCTDI is 420. According to Facione and Facione, an overall score of 350 or more indicates relative strength on each of the seven scales. A score below 280 indicates overall weak dispositions to critical thinking. Cronbach's alpha reliabilities of the CCTDI have been reported as between .90 and .91 overall across high school and college students, and scale reliabilities range from .72 to .80. Information has not been reported for test-retest reliability. Content validity is based on claims that items are derived from the consensus description of dispositions of critical thinking by the 46 experts involved in the Delphi Report. Claims of predictive and construct validity have been questioned in a review by Callahan (1995), but she concluded that the instrument is useful for certain purposes, if, for example, appropriate caution is used to match items and research questions.

Use of the California Critical Thinking Dispositions Inventory was tested by this researcher in the semester preceding the research project. One section of U.S. History 1877 to the Present, one section of World Civilizations to 1500, and three sections of Teaching Diverse Populations took the instrument as a pretest and posttest. All sections testing the use of the CCTDI were taught by the researcher and received some training in Paul's model for critical thinking since the researcher was concurrently testing the use of the experimental model. Results

from the background study were used to estimate what changes might be expected

after a semester-long course and to determine if any revisions were needed in the

instrument or the testing procedures. Cronbach's alpha reliabilities for the CCTDI

were .90 on the pretest and .92 on the posttest. Student scores averaged 303.35

($\underline{SD}$ = 30.54) on the pretest ($\underline{N}$ = 113) and 303.9 ($\underline{SD}$ = 34.84) on the posttest

($\underline{N}$ = 93). These means fall between the scores that developers of the instrument

identify as relative weak to strong (280, 350). Table 2 contains means and

Cronbach Alpha Reliabilities for the scales. Pretest to posttest scores did not show

significant differences in the total score or on any individual scale, nor did scores

from day and evening sections show a significant difference.

Table 2.

Preliminary Study - Mean Scores for Critical Thinking Dispositions

Scale	Pretest ($\underline{n}$ = 113)			Posttest ($\underline{n}$ = 93)		
	$\underline{M}$	$\underline{SD}$	$\underline{r}$	$\underline{M}$	$\underline{SD}$	$\underline{r}$
CCTDI – total	303.35	30.54	.90	303.90	34.84	.92
Truth-seeking	37.83	6.01	.61	38.19	7.18	.73
Open-mindedness	44.08	5.74	.62	43.09	5.68	.59
Analyticity	43.60	5.87	.67	44.56	6.32	.72
Systematicity	41.44	7.30	.73	41.99	7.64	.77
CT Self-confidence	43.04	6.38	.75	43.73	6.52	.77
Inquisitiveness	46.89	6.61	.74	46.06	7.44	.78
Cognitive Maturity	46.47	5.99	.55	46.29	7.03	.69

History achievement. Questions selected from two forms of the College

Board Achievement Test in American History and Social Studies (also called the

SAT II: American History and Social Studies Subject Test), developed by the

Educational Testing Service (ETS), were used to test content knowledge of U.S.

History 1877 to the Present (Educational Testing Service, 1990, 1994). Various

forms of American History and Social Studies Tests were published from 1962 to

1994 and were updated every three years. Currently, the test is no longer

published, but disclosed versions are available, and ETS granted this researcher

permission to use any questions from the disclosed tests in this study. An entire

test administered during a 60 minute time period consisted of 90 to 95 multiple-

choice questions and was graded on a scale from 200 to 800 (SEM=30, SD=100).

The questions covered political, economic, social, intellectual, and cultural

history, as well as foreign policy. ETS described the instrument as testing

students' ability to analyze, interpret, generalize, and evaluate what has been

learned in history along with recall of information. H. R. Anderson (1965), who

reviewed an early version of the test, reported a reliability of .91 and considered

the test useful and well-constructed for a timed objective exam. Its validity claims

were supported by the fact that it was developed by groups of content and testing

experts, and it has undergone frequent and rigorous reviews for continued

validity. New questions have been pretested, then included, revised, or eliminated

in order to maintain the overall integrity and difficulty level of the test.

Questions based on topic areas covered in the U.S. History 1877 to the

Present course were selected from forms 3EAC2 and K-30AC, published by the

College Board in 1990, and 1994, respectively. Thirty-five questions were

included on this instrument (History Content Exam) with careful attention paid

both to matching the content of the questions on the instrument to course content

and to maintaining a variety of item difficulty levels consistent with the structure

of the ETS exams. Students were allowed 30 minutes to complete the 35 question

test. Selecting appropriate questions from two forms of a standardized test might

raise concerns about reliability and validity established for the entire test.

Nevertheless, the researcher concluded that the rigorous procedures used by ETS

for constructing individual questions, combined with careful selection of

questions by the researcher, provided a valid and reliable classroom test of

knowledge of history content in U.S. History 1877 to the Present. This instrument

was tested in the semester preceding the study in three sections of U.S. History

1877 to the Present. One section was taught by the researcher ($\underline{n}$ = 7) and the

other two sections were taught by two other history instructors on staff at the

participating institution ($\underline{n}$ =22, 15). The test was given in each of the three

sections ($\underline{N}$ = 63) as a pretest and again as a posttest ($\underline{N}$ = 44). The reliability

coefficient for the 35 question exam was K-R 20 = .87. Results from the History

Content Exam appear in Table 3. While mean scores on the pretest were similar in

all three sections, posttest scores varied considerably. The higher mean score on

the posttest was expected in the researcher's section as compared to posttest

scores in the other two instructors' sections. This difference might

suggest that the researcher created a test reflecting the knowledge that students in

her section were expected to gain. Alternatively, this difference might be due to

Table 3.

Preliminary Study - History Content Exam

Group	Pretest			Posttest		
	M	SD	n	M	SD	n
Instructor A (Researcher)	12.20	--	9	25.14	4.85	7
Instructor B	11.60	--	31	13.68	5.53	23
Instructor C	12.20	--	22	16.80	6.38	15
Combined	11.97	4.77	64	16.57	7.07	44

Note. Dashes indicate the Standard Deviation was not estimated.

variations in instructor approach, skill, and/or effectiveness. Still another interpretation would suggest that the small group sizes ($\underline{n}$ = 7, 22, 15) limit the importance of such comparisons. Separate means are provided to allow comparison with the findings in the principal study. In the researcher's section difference scores were significant, $\underline{t}$ (7) = 5.88, $\underline{p}$ =.001. The time limit of 30 minutes was judged to be sufficient in all sections, and no revisions were made to either test items or time limits for the principal study.

Demographic Survey. A Demographic Survey, composed of 28 questions, was developed by the researcher (Appendix D). This survey provided descriptive information about the sample, presented in the section on research participants. Results from questions one, three, and four were used to answer research questions related to the influence of gender and age on efforts to develop students' critical thinking abilities. The additional questions were included to

provide the researcher with more information regarding students' prior

educational backgrounds and experiences.

Student Perception of Instruction. Each term, the institution participating

in this study provides instructors with "Student Perception of Instruction" forms

to be completed by students. The purpose is to provide students with an

opportunity to express anonymously their views about the way classes are taught.

The survey includes 15 statements about the instructor and instruction that

students respond to by selecting from four possible choices identifying their

perception of instruction in that course: almost always, frequently, sometimes, or

seldom. A copy of this form is provided in Appendix B. In addition to the 15

statements written on the form, space is provided for instructors to include

additional questions that can be answered using the same terms. The researcher

used this form in two ways: (a) to assess consistency of student perception of

instructional quality between the experimental and control groups, and (b) to ask

questions about students' reactions to primary source reading assignments. As

shown in Appendix B, students in experimental ($\underline{M}$ = 3.81) and control

($\underline{M}$ = 3.84) groups had similar perceptions of instructional quality, supporting the

claim of consistency of instruction across groups.

Interviews. The instructor interviewed selected students from each of the

four sections ($\underline{n}$ = 8) concerning their experiences completing document

assignments and their understanding of critical thinking. During the third week of

the semester, the researcher randomly selected five students from each of the four

sections participating in the study (numbers were drawn and a record of the order

was kept). The researcher expected to interview two students from each section, but five numbers were drawn in the event that some students might not wish to participate in the interviews. The first two students selected in each section agreed to be interviewed. One of the eight students, a student in one of the experimental sections, participated in the first round of interviews but stopped attending the course before the second round of interviews. That student was replaced in the second round of interviews with the third student who had been randomly selected for that section. The replacement student participated in the second set of interviews only.

Interview questions were developed by the researcher and were as similar as possible for the experimental and control groups. They varied slightly between the first and second round of interviews. Each interviewee was asked eight questions plus appropriate follow-up probes concerning his or her understanding of the concept of critical thinking, the degree of difficulty the student found in completing course assignments using primary source documents, and any practical applications the student had discovered for history or critical thinking. Interviews were conducted individually between the instructor and the participating student during the sixth and eleventh week of classes. Each interview took less than ten minutes. All interviews were taped, and transcriptions were made following completion of each set of interviews. Interview scripts and transcribed interviews are found in Appendix F.

Summary of instruments. Following an extensive literature review to identify the best instruments currently available for assessing the effectiveness of

integrating Richard Paul's model for critical thinking into post-secondary history courses, the researcher selected four instruments: the DBQ section of the 1986 AP U. S. History Test, the Ennis-Weir Critical Thinking Essay Test, the California Critical Thinking Dispositions Inventory, and questions from the American History and Social Science Achievement Tests. This researcher received permission from ETS to use questions or sections from disclosed forms of the AP Exam in U. S. History and the Achievement Test in American History. Robert Ennis similarly provided permission to use the Ennis-Weir test in this research project. The CCTDI was purchased from its publishers. The Ennis-Weir Critical Thinking Essay Test, the California Critical Thinking Dispositions Inventory, and questions from the American History and Social Science Achievement Test were used as a pretest and as a posttest, and the DBQ portion of the AP U. S. History Test was used as a posttest only. The usefulness of each instrument for this research study was explored during the semester preceding the principal investigation.

A demographic instrument was developed to obtain further data on the research participants. The "Student Perception of Instruction" form was used to determine consistency of instruction. The researcher conducted student interviews to gain further understanding about the process of learning to think critically.

Design and Procedures

A 2 (group) X 2 (age) X 2 (gender) quasi-experimental design was used in this study. Sections, not individual students, were randomly assigned to experimental and control conditions. The Ennis-Weir Critical Thinking Essay

Test, the California Critical Thinking Dispositions Inventory, and questions from the College Board Achievement Test in American History (History Content Exam) were used to gather data at two points in time (pretest and posttest). A DBQ section of an AP Examination for United States History was used as an additional posttest. The researcher taught four sections of U.S. History 1877 to the Present, two as the experimental group and two as the control group. The experimental and control groups both received 150 minutes of classroom instruction per week for one semester (i.e. 15 weeks). At the end of the first week of classes, pretesting began. Students who missed a test in class were required to take it in the Teaching, Learning, and Computing Center. Regular and experimental activities, including administration of pretest and posttest instruments, lasted for 15 weeks plus the final exam period.

During the semester preceding the experimental study, the instructional model, materials, procedures, and assessment instruments intended for use in the research project were pretested. The primary purposes for testing these aspects were to provide the researcher with additional practice and experience in engaging students in the instructional treatment in order to enable a smooth transition into the actual experiment, to provide the instructor and other raters with experience in scoring the Ennis-Weir and the DBQ, and to identify possible problems with the instruments or the way they were administered. It was also meant to reveal any significant problems with student reactions to both the instructional program and assessment instruments.

Several adjustments were made in response to the preliminary study. The instructor decided to eliminate the DBQ as a pretest due to students' frustration in writing an essay requiring skills and knowledge they lacked. Scoring procedures for the DBQ and Ennis-Weir were modified. Modifications were made to the critical thinking packet to include definitions of critical thinking, definitions of the elements of reasoning, and information on thinking fallacies. The instructor also decided to require only two or three selected documents from each chapter in the source reader instead of complete chapters.

Student motivation could potentially influence the accuracy of data from these instruments. To increase students' motivation to do their best on the various assessments used in this study, points used in the calculation of final course grades were assigned for each instrument (five points for the pretest). Toward the end of the course, the instructor generally explained the rationale for taking the tests and students were told that data obtained from these instruments would help faculty improve instruction for subsequent students. When students took the CCTDI and the Ennis-Weir as posttests, they received five additional points. Additionally, two of the posttests, the DBQ section of the 1986 AP U.S. History Exam and the History Content Exam composed of selected questions from the College Board Achievement Test in American History served as the final exam for the course. Each was worth 100 points.

Sections participating in the study met at 9 MWF, Monday Evening 6:30-9:30, 8TR, and 11TR. The 9MWF and 11TR sections met on one campus and the Monday evening and 8TR sections met on the other campus. The four sections

were taught by the researcher in history classrooms containing maps at the front of the room and a large chalkboard. About 40 individual desks were arranged in rows facing the front of the room. Sections were randomly assigned to the experimental and control groups by campus. The 9MWF and 8TR became the experimental group, and the Monday evening and 11TR sections became the control group. To make the research design as balanced as possible, the researcher had initially requested two evening courses and two day courses, but the participating institution was unable to accommodate this request.

Since the researcher was also the instructor for both experimental and control sections, instructor bias was a possible threat to the internal validity of this study. To help address this issue, tape recordings of several classes were made during the study to document instructional procedures and class activities and to address treatment fidelity issues. "Student Perception of Instruction" forms provided data to compare consistency of instruction. Results from the "Student Perception of Instruction" forms indicated a high level of consistency of instruction across groups. Overall rating for the instructor was 3.81 in the experimental group and 3.84 in the control group. More detailed information on these ratings is found in Appendix B. Every effort was made by the instructor to maintain treatment fidelity, and self-regulation was aided by the tape recordings.

Prior to conducting the study, the researcher met with the Dean of Instruction, the Arts, Letters, and Social Sciences Division Director, and the Social Sciences Academic Coordinator of the community college to explain procedures and address concerns. A letter was sent formally inviting the

institution to participate in the study, and the researcher received a letter from the college supporting the research study (Appendix G).

Approximately six hours of course time was spent on testing related to the study, and the rest of the time was spent on regular course activities and experimental training. The next section describes the experimental treatment, and the following section describes instructional procedures used with the control group.

Instructional Method and Materials

Experimental group. Richard Paul's model for critical thinking (Foundation for Critical Thinking, 1996) was used as the basis for the experimental treatment in this study. The instructor infused Paul's model into the experimental sections by (a) teaching the model explicitly, (b) providing handouts of the model, (c) training students to use the model to analyze primary source documents and historical problems, (d) giving assignments that required students to use the model, and (e) conducting classroom discussions according to the elements and standards set forth in the model. Students had multiple opportunities to experience its use.

Paul's model includes elements of reasoning, universal intellectual standards used to assess student reasoning, and traits or virtues of the reasoning mind. Paul presents his approach to critical thinking as a general model of reasoning that can be applied to any problem or issue requiring reasoning. It was chosen from among several alternative models (Adler, 1982; Browne & Keeley, 1994; De Bono, 1994; Halpern, 1996; King, 1994; Tishman, Perkins, & Jay,

1995; Sternberg, 1987) because of its applicability to document analysis, because it incorporates critical thinking standards, and because it addresses students' dispositions in the development of their critical thinking skills. It can be infused into any academic content and has the additional advantage of being useful for thinking about academic subjects or everyday issues.

A graphic summary of the basic model is presented in Figure 1, and the packet of critical thinking material that was distributed to students appears in Appendix A. The packet contained six pages on Paul's model, several definitions of critical thinking, strategies used by historians to interpret primary source documents, and a handout on common reasoning fallacies.

Prior to the present study, the researcher participated in intensive training in general features of Paul's model, facilitating Socratic discussions, and assessing critical thinking. Participation in a two-day professional development workshop taught by Richard Paul on facilitating Socratic discussions provided an overview of the model and practice in using the model in classroom discussions. Attendance at two international conferences on critical thinking presented several opportunities to practice the general features of Paul's model in sessions facilitated by educators who use the method in their own courses. At one of these conferences, the researcher attended three 90-minute sessions taught by Richard Paul on assessing critical thinking. Additionally, the researcher completed the "Training for Trainers Academy" developed by the Center for Critical Thinking at Sonoma State University in Rohnert Park, California, sponsors of the International Conference on Critical Thinking and Educational Reform. This

ELEMENTS

Purpose	Assumptions
Question at issue or Problem to be Solved	Inferences & Interpretations
Concepts	Points of View
Information	Implications & Consequences

TRAITS

Independent Thinking

Intellectual Empathy

Intellectual Humility

Intellectual Courage

Intellectual Integrity

Intellectual Perseverance

Faith in Reason

Intellectual Curiosity

Intellectual Civility

Intellectual Responsibility

REASONING

STANDARDS

Clear	Broad
Specific	Deep
Relevant	Accurate
Logical	Precise
Significant	Fair
Consistent	Complete

ABILITIES

Process	Object	Standard
Identifying	purposes	clearly
Analyzing	problems	accurately
Synthesizing	interpretations	precisely
Evaluating	concepts	deeply
Reviewing	assumptions	thoughtfully
Considering	points of view	fairly

Figure 1. Richard Paul's Model for Critical Thinking

intensive five-day course taught participants to integrate Paul's model into their own courses and also modeled methods of training other faculty to teach for critical thinking using Paul's model. The training provided in these settings familiarized the researcher with the model and provided intensive practice in integrating the model into academic content.

Student participants used two textbooks: The Brief American Pageant (Vol. 2) by Kennedy, Bailey, and Piehl (1996) and Constructing the American Past: A Source Book of a People's History (Vol. 2) by Gorn, Roberts, and Bilhartz (1995). These textbooks have been adopted for use in all sections of U. S. History 1877 to the Present at the institution participating in the study. While The Brief American Pageant is a condensed but standard history textbook, Constructing the American Past is a primary source reader. Primary source readings were used in the experimental condition as the focus for explicit instruction using Paul's model, but students in both experimental and control groups read and discussed the same documents in the primary source reader. Gorn et al. contains 15 chapters, each dealing with a different event or issue in U.S. history after the Civil War. Students had assignments in 13 of the 15 chapters in Gorn et al. over the course of the semester. Each chapter contains introductory material, multiple documents from different sources representing divergent viewpoints, and questions at the end of the chapter that probe factual understanding and critical thinking. For example, Chapter 2, "The Great Strike of 1877," includes writings by a striker, the president of a railroad company, the head of a strikebreaking detective agency, two labor leaders, and a minister who

opposed the strike. Typically, students were assigned to read two or three documents from each chapter. In Chapter 2 on the railroad strike of 1877, students were assigned to read the documents by the striker, the president of a railroad company, and the head of a strikebreaking detective agency. Assigned readings were the same for experimental and control groups (see Basic Course Information in Appendix H for specific assignments).

From the very first week of the course, the instructor began emphasizing critical thinking in the experimental sections. First, students participated in a Socratic discussion on the question "What is history?" Then the instructor presented historians strategies as investigated and described by Wineburg (1991a, 1991b): sourcing (noting characteristics of the author of a document), contextualization (considering the document in the context of its time and place), and corroboration (checking the contents of one document against another in summarizing an event). Analyzing history by its political, economic, social, and cultural aspects was also explained and illustrated.

The instructor began introducing Paul's model to students in the experimental sections during the second week of classes (i.e. during the week following completion of pretesting). The model includes eight elements of reasoning: Purpose of the thinking (goal, objective), Question at issue or problem to be solved, Concepts (e.g., theories, definitions, principles), Information (data, facts, observations), Points of View (frame of reference, perspective), Inferences and Interpretations (conclusions, solutions), Assumptions, and Consequences and Implications. For the first assignment in Gorn et al. (1995), the instructor

concentrated on the elements of reasoning most likely to be familiar to students:

point of view, purpose, question, supporting information, and concepts. These

five elements were introduced and emphasized specifically when teaching the first

assignment in Gorn et al., a chapter on the purposes and activities of the Ku Klux

Klan in the South during Reconstruction. The instructor listed the five elements of

reasoning being emphasized on the board, defined each and gave examples, and

then related point of view to historians' strategies of sourcing and

contextualization, introduced previously during the first week. Students were

assigned to read Documents 1, 2, and 3 in Chapter 1 by the next class meeting and

to apply the elements of reasoning to Document 1 ("Initiation Oath of the Knights

of the White Camelia"). Students were told that they would receive credit based

on their efforts to complete the assignment ("Daily Assignment" credit) and that

the class would work in small groups to better understand the assignment. During

the next class meeting, students were put in groups of three or four students to

share their findings on Document 1 and to analyze Document 2 or 3 (some groups

were assigned Document 2 and some were assigned Document 3). While students

worked collaboratively, the instructor checked students' papers and gave

individual credit where appropriate. Student groups were then called on to share

their findings with the whole class, and discussion followed on how well or

poorly the assigned documents supported each other's viewpoints (corroboration).

This activity served to help students better understand what kinds of reasoning

were being expected of them as well as to improve their comprehension of

historical events and issues in the South during the Reconstruction period.

When the second chapter in Gorn et al. (1995) was assigned, students were given instructor-developed "Reasoning about History" worksheets to use in completing the assignment (shown in Figure 2). "Reasoning about History" worksheets combined Paul's eight elements of reasoning with historians' strategies researched by Wineburg (1991a). Point of view was listed first with two subheadings: source and context. The rest of Paul's elements followed, including three (assumptions, inferences, and implications) that had not been introduced to students at that point in time. The final item on the handout was corroboration. Students were shown that they had already worked with most of the items on the worksheet. They were then introduced to the elements of reasoning that had not been included in the previous assignment: assumptions, inferences, and implications. These elements were defined, and two everyday situations were used to clarify the concepts. Students were given a statement "The girl is not happy," and the class worked through possible assumptions, inferences, and implications of that statement. The second situation provided was "Your teenage son is late coming home from a late night date." Students were asked to work through possible assumptions, inferences, and implications individually and then with a partner. Class discussion followed, further clarifying meanings. After this introduction to the final three elements of reasoning, the instructor assigned students to attempt to complete a "Reasoning about History" worksheet on the first two documents in Chapter 2. They were also assigned to read Document 3. During the class session when the assignment was due, students worked in groups of three to help each other better understand the elements of reasoning and the

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Reasoning About History

Title, issue, subject, etc. under consideration:

Elements of Reasoning

1. What are the main **Point(s) of View**, or **Frame(s) of Reference**?
   a. [**Sourcing**] Who is the author, what point of view does he or she bring to this issue, and how credible is he or she?

   b. [**Contextualization**] In what context (frame of reference) was this document produced? What political, economic, social, and cultural circumstances might have affected this document?

2. What is the main **Purpose, Goal, or End in View**?

3. What is (are) the key **Question(s) at Issue** or **Problem(s) to be Solved**? Why is it important to consider this (these) issue(s)?

4. What is the most important **Data, Information**, or **Evidence** (How do they know what they know? Is the information relevant and sufficient to support conclusions?)

5. What main **Assumptions** underlie the thinking (things taken for granted, explicit and implicit)? [Consider assumptions in the **context** of the period]

6. What key **Concepts and Ideas** need to be understood? (Clarify at least three.) [Consider the concepts and terms in the **context** of the period]

7. What main **Inferences or Interpretations** are made, leading to Conclusions?

8. What would be the main **Implications and Consequences** if this course of action or belief is accepted, or not accepted?

9. [**Corroboration**] What do other documents, etc. on the same topic contribute to understanding the issue? Do the documents agree, and if not, which has a stronger argument?

Figure 2. Student Handout – Reasoning About History Form

issues addressed in the documents. Students were again given daily assignment points based on their apparent efforts in doing the assignment. Students were reassured that even if this approach seemed difficult, it would become easier with practice. They were also reminded that learning this approach to reasoning would be useful in other courses and in everyday situations.

To further familiarize students in experimental sections with Paul's model for critical thinking, the instructor listed Paul's elements of reasoning on the board and introduced a current topic into class discussion. Students were asked to analyze accusations against President Clinton of an improper relationship with a White House intern followed by an attempted cover-up by going through the eight elements of reasoning. This activity served to increase students' familiarity with the model they were being asked to use to analyze historical documents, and it illustrated the broad applicability of the model. By the fourth week of the term, students in experimental sections had been introduced to all eight elements of reasoning, and they were familiar with worksheets that combined the elements with historians' strategies. These worksheets served as a basis for most of the remaining source reading assignments. Throughout the course, various elements were emphasized in class discussions of documents. For example, assumptions (about the nature of women) were discussed in Chapter 6 which contained a variety of documents about the birth control movement of the early 1900s, and purposes and implications were emphasized in a chapter on WWI propaganda posters.

In the fifth week of the semester, the instructor gave students in experimental sections a "Critical Thinking and History" packet (Appendix A) containing definitions of critical thinking, Paul's elements of reasoning, intellectual standards, traits or dispositions of a critical thinker, and graphic representations of the relationship between elements, standards, and traits. The packet also contained a page explaining the three heuristics noted by Wineburg (1991a) and a two page overview of common reasoning fallacies. The instructor explained the material to students through a formal presentation with overhead transparencies as students followed in their packets. The importance of learning to think critically was emphasized, various definitions were briefly compared, the elements of reasoning were reviewed and compared with standards and dispositions, and historians' strategies were explained in more detail. Reasoning fallacies were briefly introduced at this time. With the exception of the definitions of critical thinking and the fallacies, most of this material had been previously introduced to students through class assignments and activities. The packet served to provide students with a written reference and more detailed information on Paul's model and related information. During the remainder of the course, students were asked to refer to sections of the packet for various assignments or to review it before tests. Additionally, students in the experimental group were encouraged to use information in the packets in reading outside the history course, whether for academic assignments, job-related documents, or leisure reading.

The instructor encouraged students in experimental sections to use the elements and standards included in Paul's model in class discussions and in

written work throughout the semester. For example, a student who used the word "equality" in connection with the Constitution was asked to clarify (a standard) the concept (an element). A student evaluating U.S. expansionism during the late 1800s might be asked what evidence (an element) might be relevant (a standard) to the issue, or asked to broaden (a standard) her perspective and consider another point of view (an element). To a lesser extent (both less explicitly and less frequently), students were encouraged to use Paul's intellectual traits. For example, asking students to clarify the concepts they used helped them recognize the importance of intellectual integrity; requiring them to support their reasoning with evidence promoted development of intellectual responsibility; encouraging them to find or consider another point of view supported intellectual empathy and open-mindedness. Further, each of these important dispositions or traits encourages a critical thinker to assess his or her own thinking. Students were also introduced to self-assessment in the structured controversy and the required essay (see below). Students received copies of the grading standards and explicit instruction on how the grading standards reflected the elements of reasoning and intellectual standards. To maintain an equivalent grading system for the experimental and control groups, student self-assessment was not used in assigning course grades.

Reasoning fallacies were addressed on occasion as they appeared in documents. Students in experimental sections were regularly asked to check the credibility of sources. Examples of faulty assumptions, questionable analogies, equivocation, overgeneralizations, emotional language, and insufficient evidence

were readily found in the documents. Critical thinking dispositions (or lack thereof) were also pointed out as the material and time allowed, for example in H. L. Mencken's scathing obituary of William Jennings Bryan (in Chapter 9 on the science/religion conflict of the 1920s). Mencken's cleverness and writing ability were acknowledged, but his lack of intellectual humility and failure to empathize with the targets of his satire were also addressed. Paul's intellectual traits of the critical thinker were emphasized less than the elements or standards due to time limitations.

The flexibility and responsive nature of Paul's model meant that while the instructor had established instructional goals for each class period in reference to content and concepts, questions, and activities, an exact script for each class session could not be prepared in advance.

On several occasions during the semester, the instructor facilitated Socratic discussions in the experimental sections. One example concerns the Holocaust. The instructor read a recent newspaper "Letter to the Editor" that compared the current situation in Bosnia-Herzegovina to the Holocaust. Students in the experimental group participated in a Socratic discussion on who should be held accountable for the Holocaust or similar attempted genocides.

Appendix H contains a copy of the course syllabus for the experimental group (Course Outline A). A typical class period included lecture (no more than 25-30 minutes for a 50 minute class period) and some kind of student activity, typically a class discussion of assigned source readings or one of the activities described below.

In addition to discussion focused on readings from Gorn et al. (1995), the experimental group was given other assignments, regular activities in this instructor's previous U. S. history classes, that required the use of higher order thinking skills and historical thinking. The main examples of these activities are as follows:

1. All students were assigned to read and to answer instructor prepared questions on the Constitution of the United States of America in connection with the study of Reconstruction and the 13th, 14th, and 15th Amendments. The instructor facilitated a Socratic discussion on the purposes listed in the preamble to the Constitution in experimental sections ("List, define, and briefly interpret each of the purposes of the Constitution as listed in the preamble. Have each of these purposes been fulfilled?"), while discussion in control sections focused on questions requiring definitions or factual information.

2. Students were assigned to complete "Historical Causation" handouts, used to analyze multiple causation, for several events in U. S. history. These events included World War I, World War II, and the Civil Rights Act of 1964. The first assignment (World War I) was done as an in-class activity in small groups; subsequent causation assignments were completed individually for daily assignment credit. This activity was the same in control and experimental classes.

3. A third type of activity that encouraged critical thinking required students to analyze political, economic, social, and cultural/religious characteristics of events and trends in American history. For example, at the end of a unit on Reconstruction, the instructor summarized the effects of

Reconstruction on the South by eliciting a class discussion of the political,

economic, social, and cultural effects. This type of analysis was introduced during

the first week of the course and used throughout the course for oral discussions, in

test questions, and on occasion as a written assignment that required students to

analyze the United States at a point in time (e.g. 1890) using these characteristics.

This activity, when used, did not vary between control and experimental sections.

4. Students in each section also participated in a structured controversy in

which each student read a set of primary sources on U. S. annexation of the

Philippines (Gorn et al., 1995, chap. 5), took a position favoring or opposing

annexation based on questions provided by the instructor, prepared to support his

or her position using material found in the assigned readings, argued his or her

position within groups of four students in class, and finally switched positions in

order to understand better the entire controversy. Each group of three to five

students then attempted to reach consensus based on evidence and strength of

arguments and wrote a group position paper. This activity was handled in the

same way for each group except that experimental sections were reminded to use

Paul's model in analyzing documents, preparing their arguments, and writing the

position paper. The instructor gave each student a copy of the grading criteria for

the oral assessment portion of the assignment. In experimental sections, the

instructor explicitly related the grading criteria to Paul's model.

5. Students in each section were assigned to write an essay. Students

received packets containing an essay question on U. S. women from 1890 to

1940, source readings to use in preparing the essays, and general information on

writing an essay in a history course and on grading procedures. Students were also encouraged to use various readings on women from Gorn et al. (1995) in addition to the source readings contained in the essay packet. The essay question packet was an adaptation of a recent DBQ and thus provided all students with experience in responding to the type of question that would later be given to them as 50% of their final exam and used as a posttest for this study. The essay packet was the same for both experimental and control groups, and instructions and grading procedures were the same as well. Before turning in their essays, students in all sections had the opportunity to read and to evaluate another student's essay using the instructor's grading criteria and to have their own essay evaluated by a peer. Experimental groups were reminded to use the critical thinking model in analyzing documents, and grading standards were explicitly related to intellectual standards found in Paul's model.

The five activities described above all relate to historical thinking or thinking like a historian. Analyzing primary sources, exploring and interpreting multiple causation, characterizing an event by examining its political, economic, social, and cultural/religious characteristics, and developing an argument supported by evidence from primary sources are all typical activities of historical researchers. In addition to these ways of thinking historically, specific references were made in all sections to the heuristics described by Wineburg (1991b) that distinguish between expert historians and novices: sourcing, contextualization, and corroboration. In other words, students were introduced to cognitive research into historical thinking as well as given opportunities to practice it on a beginning

level. For students in experimental classes, sourcing, contextualization, and corroboration were related to Paul's model, for example pointing out the connection between Wineburg's "sourcing" and Paul's "point of view" and "purpose." The critical thinking packet handed out to experimental groups also contained a handout listing and defining historians' strategies as identified by Wineberg. All sections were encouraged on several occasions to note the relevant characteristics of the author of a document, to consider the document in the context of its time and place, and to check the contents of one document against another in summarizing an event.

Following is an illustrative lesson plan for a discussion of assigned readings from a unit on the Great Depression. Students were assigned to read Documents 1, 4, and the last poem in Document 6 in Gorn et al. (1995). Students in experimental sections were told to complete a "Reasoning about History" form for one letter of their choice in Document 1 and for Document 4.

Activity Script:

1. Students in small groups -- 10 minutes

Each group discussed the letters in Document 1 analyzed by various group participants and the point of view and credibility of the author for Document 4.

2. Class discussion of source readings -- 20 minutes

Students were called on to provide the various points of view (element) shown in letters written to the Roosevelts during the Depression. Students were also asked to point out stereotypes and emotive language (reasoning fallacies) when they found them. Varied purposes of the letter writers, their assumptions about other

people's experiences, inferences they made about the causes of the Depression, and the limits of personal experience as a source of data were discussed. Letters were corroborated (historian's strategy) to try to answer the main issues of how bad the Depression was and how varied people's experiences were. In Document 4, the impact of the Depression on women and the laboring class was highlighted, and point of view/sourcing (the author's credibility) was emphasized. A student in one section was interested in the Depression era photographs contained in the textbook, so some class time was devoted to analyzing several photographs.

3. Summation -- 5 minutes

The instructor guided students to recognize how these documents inform our understanding of political, economic, social, and cultural characteristics of the Depression in the United States. During succeeding class periods, references were made to these documents as students studied United States involvement in World War II and our emergence from that war as an economic superpower.

The instructor used a variety of assessment instruments and methods. In addition to the pretest and posttest instruments already described, students took four exams during the course, at approximately four-week intervals. Exams reflected the types of questions asked on the multiple choice pretest and posttest History Content Exam, but they also included essay questions requiring students to respond with one paragraph to one page answers. Each exam was worth a maximum of 100 points, and students also took four map/date quizzes worth 25 points each. A group position paper was required following the structured controversy activity, and students' grades on the structured controversy also

included student self- and peer-assessments as well as instructor assessment of oral competencies. Students also wrote a three to five page essay to fulfill part of the Gordon Rule writing requirement (2,000 words) for this course. Points awarded to students for completing the pretest instruments were computed as part of a Daily Assignment grade for each student that also included checks on completion of reading assignments and various handouts already described (e.g. historical causation).

Control group. Students in the control group used the same two textbooks as the experimental group: The Brief American Pageant (Vol. 2) by Kennedy, Bailey, and Piehl (1996) and Constructing the American Past: A Source Book of a People's History (Vol. 2) by Gorn, Roberts, and Bilhartz (1995). These textbooks are described in the previous section.

On the first day of class in the control sections, the instructor wrote several definitions of history on the board and provided a brief explanation of various concepts of history. During the first week of the course, the instructor also presented historians strategies (sourcing, contextualization, and corroboration; Wineburg, 1991a, 1991b) to students by providing definitions and examples. Additionally, control group students were introduced to analyzing historical events or trends by examining their political economic, social, and cultural aspects.

Assigned readings for the control group were the same as those for the experimental group, but the two groups used different approaches for analyzing primary sources. Instead of training students to use the "Reasoning about History"

forms to analyze documents, the instructor assigned students in the control classes to complete the questions at the end of each chapter in Gorn et al. (1995). These questions were well-written, appropriate for post-secondary students, and promoted thought and discussion about important issues. Questions were divided into two sections entitled "Probing the Sources" and "Critical Thinking," typically with three to five questions in each section. To be successful in answering all of these questions, students needed to use many of the elements of reasoning made explicit in Paul's model and to draw on historians' strategies for understanding and interpreting primary source documents. For example, the questions at the end of the chapter on the Strike of 1877 (provided in Appendix I) required students to examine divergent points of view, to clarify important concepts, to make inferences, to use information and evidence to formulate arguments, and to corroborate information from various documents. The essential differences between the approaches to document analysis used in the control group and in the experimental group were the general nature of the model and the explicitness of training in the model provided to the experimental group. Control group students answered questions that were specific to each reading assignment and developed by someone other than themselves (i.e., the authors); students in the experimental group were explicitly taught to use a model (i.e., Richard Paul's) that provided appropriate general questions to ask about any document.

When assignments were due, students in control sections worked in small groups to discuss their findings, and the instructor checked to see if students had made an effort to answer the questions. "Daily Assignment" credit was given, as

in the experimental groups. Class discussion in control sections focused on the first set of questions, "Probing the Source," which generally required summaries of information included in the readings along with inferences and clarification of concepts. Selected critical thinking questions were discussed as time allowed. On occasion, control group students were encouraged to note the relevant characteristics of the author of a document (sourcing), to consider the document in the context of its time and place (contextualization), and to check the contents of one document against another in summarizing an event (corroboration).

Appendix H contains a copy of the course syllabus for the control group (Course Outline B). A typical class period included lecture (no more than 30 minutes for a 50 minute class period) and some kind of student activity, typically a discussion of assigned source readings or one of the activities listed below. Occasionally, more detailed (longer) lectures were given in control sections in lieu of time spent explaining or familiarizing students in the experimental group with Paul's model for critical thinking. In control sections, class discussion focused more on factual information and was taught more didactically. Every effort was made to keep activities identical in the control and experimental groups except for the critical thinking training materials.

As in the experimental group, the control group was given several assignments, regular activities in this instructor's previous U. S. history classes, that required the use of higher order thinking skills and historical thinking. The main examples of these activities are listed here and described more fully in the previous section:

1. Students were assigned to read and to answer instructor prepared questions on the <u>Constitution of the United States of America</u> in connection with the study of Reconstruction and the 13th, 14th, and 15th Amendments. Discussion in control sections focused on questions requiring definitions or factual information.

2. Students were assigned to complete "Historical Causation" handouts, used to analyze multiple causation, for several events in U. S. history. This activity was the same in control and experimental sections.

3. Students analyzed political, economic, social, and cultural/religious characteristics of events and trends in American history. This activity, when used, did not vary between control and experimental sections.

4. Students participated in a structured controversy based on a set of primary sources on U. S. annexation of the Philippines (Gorn et al., 1995, chap. 5). The instructor gave each student a copy of the grading criteria for the oral assessment portion of the assignment and answered student questions.

5. Students in each section were assigned to write an essay. The essay packet, instructions, and grading procedures were the same for both experimental and control groups, with the exception that in the experimental group the instructor related class grading criteria to the intellectual standards included in Paul's model.

Following is an illustrative lesson plan for a discussion of assigned readings from a unit on the Great Depression. Students were assigned to read Documents 1, 4, and the last poem in Document 6 in Gorn et al. (1995), "Writing

the Great Depression." Students in control sections were assigned to answer questions at the end of the chapter.

Activity Script:

1. Students in small groups -- 10 minutes

Small groups went over answers to questions assigned from the end of the chapter.

2. Class discussion of source readings -- 20 minutes

Students were called on to answer assigned questions and other questions that arose from student comments, supported by relevant references from the readings. Students in one section were interested in interpreting the poems in Document 6, so some class time was devoted to those readings.

3. Summation -- 5 minutes

The instructor guided students to recognize how these documents inform our understanding of political, economic, social, and cultural characteristics of the Depression in the United States. During succeeding class periods, references were made to these documents as students studied United States involvement in World War II and our emergence from that war as an economic superpower.

Testing throughout the semester was the same in control and experimental classes. Other assessments, including a group position paper written by participants in the small group following the structured controversy, an essay, and daily assignments, were the same as those in the experimental group. Tests and other assessments are described in more detail in the previous section. Grading procedures were also the same for experimental and control groups. Table 4

Table 4.

Comparison of Instructional Methods and Materials for Experimental and Control

Groups

Methods and materials	Experimental	Control
Textbooks	Same	Same
Assigned readings	Same	Same
Lectures	Same, sometimes abbreviated	Same, sometimes extended
Tests	Same	Same
Analysis of readings	"Reasoning about History" forms - 15+ uses	Questions at the end of textbook chapters
Instruction in Critical Thinking	Approximately 1.5 hours of direct instruction	None
Critical Thinking packets	Yes	No
Constitution	Socratic discussion	Factual questions
Historical Causation	Same	Same
Analysis of Historical Events	Same	Same
Structured controversy	Same[a]	Same[a]
Essays	Same[a]	Same[a]
Historians' strategies	Emphasized	Introduced

Note. [a] Students in the experimental group were reminded to use Paul's model

and grading criteria were explicitly related to the standards of the model.

provides a summary comparison of the instructional method and materials used in each group. It should be apparent that both the control and experimental groups were exposed to a variety of historical documents and historians' methods and were given assignments requiring the use of higher order thinking. The two experimental sections were given explicit instructions and training in critical thinking and document analysis according to Richard Paul's model in addition to the activities and assignments required of the control classes.

Method of Data Analysis

The specific research questions for this study, as previously stated in Chapter 1, were as follows:

1. Will a group of community college history students who receive explicit training in analyzing and interpreting historical documents according to Paul's critical thinking model perform better on a test that requires them to analyze and synthesize a set of primary sources than a group of similar students not receiving explicit instruction in critical thinking?

2. Will a group of community college history students who receive training in Paul's critical thinking model perform better on a task requiring evaluation of arguments on a contemporary issue than a group of similar students not receiving explicit instruction in critical thinking?

3. Will a group of community college history students who receive training in Paul's model for critical thinking differ in their attitudes and dispositions toward critical thinking from a group of similar students not receiving explicit instruction in critical thinking?

4. Will a group of community college history students who receive training in primary document interpretation according to Paul's critical thinking model perform better on a test of history content knowledge than a group of similar students not receiving explicit instruction in critical thinking?

5. Will there be a statistically significant difference in student performance by method of instruction according to age (under 22, 22 or older)?

6. Will there be a statistically significant difference in student performance by method of instruction according to gender?

To address these questions, several approaches to data analyses were used. Descriptive statistics were used to summarize achievement scores at the beginning (pretest) and end (posttest) of the course by method of instruction, gender, and age. They were inspected to determine if the sample showed departures from normal distribution. Patterns of interaction between variables were examined in order to describe the pattern of relationships between method of instruction and achievement level by age and gender. Scores on each instrument were also correlated with each other.

The second approach was a 2 (group) x 2 (age) x 2 (gender) analysis of covariance (ANCOVA) using pretests as covariates. Appropriate statistics were run to make sure that data satisfied the assumptions of ANCOVA. Main effects and interactions were assessed after posttest achievement scores were adjusted for differences associated with pretest achievement. Results were examined for significant differences in posttest performance as a result of method of instruction.

Additionally, possible threats to internal validity were addressed. The main threat to internal validity of a nonequivalent control-group experiment such as this one is the possibility that group differences on the posttest are due to pre-existing group differences rather than to a treatment effect. This potential threat was dealt with by using analysis of covariance (ANCOVA) to reduce the effects of initial group differences. Another threat to internal validity was possible experimenter bias. Data provided by the "Student Perception of Instruction" forms were analyzed and compared to determine if consistency of instruction across groups existed.

Information from student interviews was examined to determine if students in experimental and control groups differed in (a) the level of difficulty they found in attempting to complete primary source assignments, (b) their abilities to define critical thinking, and (c) their recognition of possible uses for critical thinking outside the history classroom.

Summary of Method

This chapter described the procedures for obtaining the research sample and selecting the instruments. It also reported the research design and experimental procedures, as well as the method of data analysis. A 2 (group) X 2 (age) X 2 (gender) design was used, using four intact sections. Two sections, one on each campus, were randomly assigned to the experimental group, and the other two sections, one on each campus, served as a control. Three instruments were used as pretest and posttest measures, and a fourth instrument, a DBQ essay question, was used as a posttest only. Both the experimental and control groups used the same textbooks. Richard Paul's model for critical thinking was taught

explicitly and used by the experimental group to interpret primary source readings assigned as course work. Both experimental and control classes were taught by the same instructor. Descriptive statistics and ANCOVAs were run for each instrument, main effects and interactions were examined for significant differences, and scores for each instrument were correlated.

CHAPTER IV

RESULTS

The purpose of this study was to assess empirically the effectiveness of

teaching Richard Paul's model for critical thinking on community college

students' abilities to think critically about U. S. history and about everyday issues,

their dispositions toward thinking critically, and their knowledge of history course

content. The three independent variables in this study were the method of

instruction (instruction that included Paul's model and instruction that did not),

student age (under 22, 22 or older), and gender (male, female). Outcome variables

were scores obtained on four instruments: a Document Based Question section

from an AP Examination for United States History, the Ennis-Weir Critical

Thinking Essay Test, the California Critical Thinking Dispositions Test, and a

History Content Exam composed of 35 questions selected from the College Board

Achievement Test in American History (see Appendix E). Additionally,

information about students' responses to the model was obtained in interviews

with randomly selected students from each of the four participating course

sections.

This chapter reports results of the study as they relate to the six research

questions. A description of the sample is provided, followed by an overview of

the data analysis procedures used in the study. Then results from each of the four

instruments are presented in turn. Statistical analyses were run with SAS

software, version 6.12 (Statistical Analysis System, 1996).

This chapter concludes with a summary of results of the interviews,

highlighting differences in reactions to primary source reading assignments

between students in the control and experimental groups.

Description of Sample

Means and standard deviations for the sample on each of the three pretest

instruments are presented in Table 5. They are presented for the total number of

students that began the study ($\underline{N} = 64$) and for students that completed all aspects

of the course and the study ($\underline{N} = 52$), thus providing the research participants. An

examination of descriptive statistics and visual displays indicated that

distributions of sample scores were mound-shaped and roughly symmetrical.

Skewness was less than 1 (largest =.55) and kurtosis was less than 1.5 (largest =

1.26) on each instrument for each group of students. Both samples appeared

Table 5.

Distribution of Pretest Scores

Pre-test Instrument	Students who began the course. ($\underline{N} = 64$)		Students who completed the course. ($\underline{N} = 52$)	
	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$
Ennis-Weir	10.68	8.26	11.55	8.25
CCTDI	295.75	28.49	296.44	26.85
History Content	13.58	4.67	14.10	4.60

relatively normally distributed. Students who completed the course had slightly

higher mean scores on the pretests than students who did not complete the course,

but it appears from these data that students who dropped the course were probably

from the same population as students who completed the study.

Since this study also addressed the effects of student age and gender on

the efficacy of Richard Paul's model for critical thinking, descriptive statistics

were obtained for each of the four instruments by age and gender. Distribution of

scores by age are provided in Table 6. In general, older students scored higher

than younger students on both pretests and posttests, with the exception of higher

scores for younger students on the History Content Exam. Older students' mean

scores dropped from pretest to posttest on the Ennis-Weir, but their means were

Table 6.

Distribution of Pretest and Posttest Scores by Age

| | Under 22 (n = 36) | | | | 22 and over (n = 16) | | | |
| | Pretest | | Posttest | | Pretest | | Posttest | |
Instrument	M	SD	M	SD	M	SD	M	SD
DBQ			4.50	1.44			5.09	2.16
Ennis-Weir	10.35	8.03	11.96	9.53	14.25	8.36	12.78	8.49
CCTDI	292.67	27.33	293.31	30.86	304.94	24.43	313.75	29.39
Hist. Cont.	14.44	4.84	24.67	4.51	13.31	4.05	24.63	6.27

still higher than those of the younger students. Older students increased their

mean scores on the History Content Exam posttest by 11.32 points, while

younger students increased their scores on the posttest by 10.23 points, a slightly

smaller difference.

Table 7 contains distribution of scores by gender. In most cases, mean

scores for males were higher than for females on both pretests and posttests, with

the exception of means for the CCTDI. Females had higher scores on the CCTDI

pretest, but posttest scores for males and females were similar. Posttest scores on

the Ennis-Weir were also similar for females and males. Males performed better

on the DBQ and on the History Content Exam.

Method of Data Analysis

First, descriptive statistics were used to summarize achievement scores at

the beginning (using pretests) and end (posttests) of the course by method of

Table 7.

Distribution of Pretest and Posttest Scores by Gender

	Female (n = 34)				Male (n = 18)			
	Pretest		Posttest		Pretest		Posttest	
Group	M	SD	M	SD	M	SD	M	SD
DBQ			4.31	1.48			5.39	1.88
Ennis-Weir	10.90	8.31	12.09	8.84	12.78	8.24	12.44	9.95
CCTDI	300.06	23.05	299.82	29.62	289.61	32.49	299.17	35.95
History Content	13.50	4.84	23.91	5.42	15.22	4.01	26.06	4.05

instruction, gender, and age. Univariate statistics, including stem and leaf

displays, provided information on the shape of the distributions and appropriate

central tendencies. Second, inferential statistics were used to determine if group

means differed significantly from each other. $\underline{F}$ values were examined for

significance at $\alpha =.05$. A 2 (group) x 2 (age) x 2 (gender) analysis of covariance

(ANCOVA) was used to analyze data from each instrument. For the DBQ, pretest

scores on the History Content Exam were used as the covariate since the DBQ

also tests for knowledge of history content and results on the History Content

Exam showed the highest correlation with results on the DBQ ($\underline{r} = .57$, $\underline{p} < .001$).

For the three instruments given as both pretests and posttests (Ennis-Weir Critical

Thinking Essay Test, CCTDI, and History Content Exam), their respective

pretests were used as covariates.

ANCOVA was used to compare posttest means of the experimental and

control groups using the pretest as a covariate. This approach to data analysis is

used to increase statistical power by reducing error variance. Most scholars

consider ANCOVA appropriate for use when treatments have been randomly

assigned to intact groups, since it can adjust for small preexisting differences on

key variables that may exist among intact groups prior to the research. While

ANCOVA does not eliminate problems inherent in statistical analysis with intact

groups, it is considered appropriate if caution is used as to its limitations (Stevens,

1990).

Consideration of assumptions underlying a statistical test is important

before analyzing results. ANCOVA rests on six assumptions, each of which was

examined in relationship to data resulting from the instruments used in this study.

First, ANCOVA assumes independence. Since students worked individually on

assignments and classes were taught in a similar manner by the same instructor,

there appears no reason to believe that the assumption of independence was

violated anymore than is inevitable in an educational setting involving classes of

students. This assumption was accepted for all of the outcome variables addressed

in this study. Next, ANCOVA assumes that the sample is normally distributed.

Univariate procedures were used to examine the assumption of normality, and

results are presented in the descriptive statistics section for each instrument.

Brown and Forsythe's Test for Equality of Variance (Brown & Forsythe, 1974)

was used to examine the third assumption for ANCOVA, homogeneity of

variance. ANCOVA also assumes homogeneity of regression lines and a linear

relationship between the covariate and dependent variable. Homogeneity of

regression slopes was tested by examining whether or not an interaction existed

between the covariate and method of instruction. A test of linearity was run for

each instrument to determine if a linear model fit the data better than a curvilinear

model. Finally, ANCOVA assumes that the covariate is measured without error.

Internal consistency reliabilities and inter-rater reliabilities were examined to test

for violations of this assumption. Each of these assumptions is evaluated in the

appropriate sections for each instrument used as an outcome variable.

After each assumption was examined to see if it was tenable, main effects

and interactions were analyzed after posttest achievement scores were adjusted for

differences associated with pretest achievement. Finally, statistical results were

examined for significant differences in posttest performance as a result of method of instruction, age, and gender, and for interactions between method and age or gender. In this chapter, sections on each instrument follow and contain statistical tables and commentary about descriptive and inferential results from each instrument. Research questions five and six, concerning the impacts of age and gender on student performance on the instruments by method of instruction, are addressed in connection with each instrument rather than in a separate section.

Achievement in Analysis and Interpretation of Primary Source Documents

Research questions. The following three research questions are addressed in this section:

Will a group of community college history students who receive explicit training in analyzing and interpreting historical documents according to Paul's critical thinking model perform better on a test that requires them to analyze and synthesize a set of primary sources than a group of similar students not receiving explicit instruction in critical thinking?

Will there be a statistically significant difference in student performance by method of instruction according to age (under 22, 22 or over)?

Will there be a statistically significant difference in student performance by method of instruction according to gender?

Descriptive statistics. Descriptive statistics for DBQ scores in the experimental and control groups appear in Table 8. Univariate statistics, including visual analyses, suggested that scores were normally distributed with mound shaped, roughly symmetrical distributions in both experimental and control

Table 8.

Distribution of DBQ Scores by Method of Instruction

	Experimental (n = 23)	Control (n = 29)
M	5.28	3.93
SD	1.57	1.57

groups. The control group distribution was more positively skewed than the experimental group, but not to an unacceptable degree (skewness = 1.12). Kurtosis values were less than 1 in each group and variances were acceptably equal. These samples can be considered normally distributed.

Table 9 provides further data on DBQ scores by method of instruction and age. Both younger and older students in the experimental group performed at a higher level than students in the control group. At the same time, older students' mean scores were higher than the means of younger students in both experimental and control groups.

Table 9.

Means and Standard Deviations on the DBQ by Method of Instruction and Age

Group	Experimental (n = 29)			Control (n = 23)		
	M	SD	n	M	SD	n
Under 22	5.12	1.36	21	3.63	1.08	15
22 and over	5.69	2.09	8	4.50	2.20	8

Table 10 provides further data on DBQ scores by method of instruction

and gender. Mean scores were higher for both females and males in the

experimental groups than for either females or males in the control group. Males

scored higher than females in both control and experimental groups, but females

in the experimental group scored higher than males in the control group. The

amount of difference in scores was largest between males in the two groups, 2.11

points.

Inferential statistics for achievement in analysis and interpretation of

primary source documents. An ANCOVA was used to analyze data from the

DBQ using scores on the pretest of the History Content Exam as a covariate.

Since the DBQ also tests for factual knowledge of history, it was expected that

scores on the History Content Exam would provide the most appropriate

covariate, and the correlation between the two instruments supported this decision

(r = .57, p < .001). ANCOVA relies on six assumptions, and each assumption was

examined for the DBQ scores. The assumption of independence of scores was

accepted in the introductory data analysis section earlier in this chapter. Normal

Table 10.

Means and Standard Deviations on the DBQ by Method of Instruction and Gender

| Group | Experimental (n = 29) | | | Control (n = 23) | | |
	M	SD	n	M	SD	n
Female	4.75	1.32	20	3.68	1.51	14
Male	6.44	1.51	9	4.33	1.66	9

distribution was established in the section describing univariate results on the DBQ. ANCOVA also assumes equal variances. Results from Brown and Forsythe's Test for Equality of DBQ Variance (Brown & Forsythe, 1974) indicated that the assumption of equal variance was tenable for method of instruction and for gender, but not for age. Another finding related to age and the assumption of equal variances that could contribute to biased results (in this case, an increased chance of rejecting the null hypothesis falsely) was that the older age group had a smaller sample size but a larger variance ($\underline{n}$ = 16, variance = 4.67) on the DBQ than the younger age group ($\underline{n}$ = 36, variance = 2.07). Since the main focus of this study was method of instruction rather than age, the decision was made to proceed. In addition, ANCOVA assumes that the relationship between the covariate and dependent variable is linear and that the slopes of the regression lines of the dependent variable on the covariate are the same (parallel) across groups. A test of linearity revealed that a linear model fit the data better than a curvilinear model, and lack of significant interaction between the covariate and method of instruction for the posttest supported the assumption of homogeneity of regression for DBQ scores, $\underline{F}$ (1, 49) = 0.04, $\underline{p}$ = .84. Internal consistency reliability on the covariate, the History Content Exam, was K-R 20 = .69, adequate to indicate that the assumption of no measurement error was tenable. It does not appear that the assumptions of ANCOVA were violated when the DBQ was used as an outcome variable.

Table 11 displays results from the analysis of covariance (ANCOVA) on posttest scores on the DBQ. The experimental group mean (Adj. $\underline{M}$ = 5.58) was

Table 11.

Analysis of Covariance for the DBQ

Source	df	Adj. SS	MS	F
Covariate (History Content)	1	8.81	8.81	4.07*
Method (adj. for covariate)	1	19.68	19.68	9.08**
Age	1	6.84	6.84	3.16
Gender	1	9.40	9.40	4.34*
Method x Age (interaction)	1	1.18	1.18	0.55
Method x Gender (interaction)	1	4.83	4.83	2.23
Age x Gender	1	1.90	1.90	0.88
Method x Age x Gender (3 way)	1	0.68	0.68	0.31
error	43	93.18	2.17	

Note. **$p < .01$, *$p < .05$

statistically significantly higher than the mean score for the control group

(Adj. $\underline{M}$ = 4.20) on the DBQ, $\underline{F}$ (1,49) = 9.08, $\underline{p}$ <.004. No significant differences

were found between students under 22 and students 22 and older. Although males

scored higher than females at a significant level, $\underline{p}$ < 0.04, there were no

interactions between method and gender or method and age.

To help determine the practical significance of these results, an effect size

was calculated. An effect size is a statistical way of judging if the effect of the

treatment is large enough to make a useful difference in the outcome variable and

to characterize how well students who received the treatment performed

compared to students who did not receive the treatment. The effect size of the

difference in outcome on the DBQ was calculated at Cohen's $\underline{f}$ = .48, indicating a

difference of just under one half of a standard deviation between students in the

experimental and control groups. Further, the difference in mean scores of 1.4

points is likely to be of practical significance since this instrument is scored on a

scale of 0 to 9 points. For an effect size this large, the power of the statistical test

with a sample size of 23 (smallest sample) was estimated to be approximately .94

(Stevens, 1990, Table C.2).

Achievement in Argumentative Reasoning

    Research questions. The following three research questions are addressed

in this section:

    Will a group of community college history students who receive training

in Paul's critical thinking model perform better on a task requiring evaluation of

arguments on a contemporary issue than a group of similar students not receiving

explicit instruction in critical thinking?

    Will there be a statistically significant difference in student performance

by method of instruction according to age (under 22, 22 or over)?

    Will there be a statistically significant difference in student performance

by method of instruction according to gender?

    Descriptive statistics. Distributions of scores in the experimental and

control groups on the Ennis-Weir Critical Thinking Essay Test are reported in

Table 12. Distributions appeared mound shaped, somewhat platykurtic, and

roughly symmetrical. The largest kurtosis was – 1.17, within the accepted range

Table 12.

Distribution of Ennis-Weir Scores by Method of Instruction

Measures	Experimental (n = 29)		Control (n = 23)	
	Pretest	Posttest	Pretest	Posttest
M	11.91	15.19	11.09	8.46
SD	8.61	8.84	7.94	8.25

of normality. Thus descriptive statistics indicated that sample scores were normally distributed. The ratio between the largest and smallest variance was less than 1:1.5, and the samples were determined to have equal variances. Pretest scores in both groups were similar, but posttest scores were higher in the experimental group by 6.73 points. Part of this difference came from an increase of 3.28 points from pretest to posttest in the experimental group, but part also resulted from an unanticipated decrease in control group scores of 2.63 points from pretest to posttest. The decline in posttest scores occurred across all participant groupings in the control group, as shown in Table 13 and Table 14. Inferential statistics addressing the decrease in the control group mean appear in a subsequent section, and Chapter V includes a discussion of this drop in scores from pretest to posttest within the control group.

Table 13 displays scores on the Ennis-Weir by method of instruction (experimental and control groups) by age. In the experimental group, participant groups increased their mean scores pretest to posttest. Students under 22 increased

Table 13.

Means and Standard Deviations on the Ennis-Weir by Method of Instruction and

Age

	Experimental (n = 29)					Control (n = 23)				
	Pretest			Posttest			Pretest			Posttest	
Group	M	SD	n	M	SD		M	SD	n	M	SD
Under 22	11.48	8.00	21	15.09	9.09		8.77	8.06	15	7.57	8.58
22 and over	13.06	10.56	8	15.44	8.74		15.44	5.91	8	10.13	7.87

their mean scores (+3.61) more than students 22 and over (+2.38). In the control

group, both age group means decreased pretest to posttest, with students 22 and

over decreasing (-5.31) more than students under 22 (-1.20). The drop in control

group scores will be discussed further in subsequent sections.

Table 14 shows differences in performance on the Ennis-Weir by method

of instruction (experimental and control groups) by gender. In the experimental

group, participant groups increased their mean scores pretest to posttest, with

male students showing larger gains (+4.33) than female students (+2.80). In the

control group, means decreased pretest to posttest with males decreasing (-5.00)

more than females (-1.10). As already indicated, this issue will be discussed later

in this chapter and in Chapter V.

Inferential statistics for achievement in argumentative reasoning.

Assumptions for ANCOVA were examined for the Ennis-Weir scores. The

Table 14.

Means and Standard Deviations on the Ennis-Weir by Method of Instruction and

Gender

| | Experimental (n = 29) | | | | | Control (n = 23) | | | | |
| | Pretest | | | Posttest | | Pretest | | | Posttest | |
Group	$\underline{M}$	$\underline{SD}$	$\underline{n}$	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$	$\underline{n}$	$\underline{M}$	$\underline{SD}$
Female	11.20	8.63	20	14.00	8.34	10.46	8.13	14	9.36	9.11
Male	13.50	8.87	9	17.83	9.82	12.06	8.02	9	7.06	6.98

assumption of independence of posttest scores was accepted in the introduction to this chapter. Normality of the sample was supported by univariate analysis in the previous descriptive section. Brown and Forsythe's Test (Brown & Forsythe, 1974) supported the assumption of equal variances for method, age, and gender. The test for linearity indicated a linear relationship, and lack of significant interaction between the pretest and method of instruction for the posttest supported the assumption of homogeneity of regression for the Ennis-Weir scores, $\underline{F}$ (1, 49) = 0.09, $\underline{p}$ = .77. Interrater reliabilities for scores on the Ennis-Weir Critical Thinking Essay Test were .98 on the pretest and .99 on the posttest, indicating that the assumption of no measurement error was tenable. In summary, the assumptions of ANCOVA were not violated when the posttest was used as the outcome variable.

Since the required assumptions were met, a 2 x 2 x 2 ANCOVA was performed on the posttest scores of the Ennis-Weir test with pretest scores serving

as the covariate. Table 15 displays the results of ANCOVA on scores of student

achievement in argumentative reasoning. Analysis of covariance on scores for the

Ennis-Weir, adjusted for pretest performance, revealed a significant difference

between methods of instruction, $\underline{F}$ (1, 49) = 23.02, $\underline{p}$ < 0.0001. Mean scores were

significantly higher for the experimental group (Adj. $\underline{M}$ =14.85) than for the

control group (Adj. $\underline{M}$ = 8.88) on the Ennis-Weir Critical Thinking Essay Test.

The interaction between age and gender also produced a significant result at

$\underline{p}$ < .02, but no interactions between method and age or gender were found to be

statistically significant for this instrument.

Table 15.

Analysis of Covariance for the Ennis-Weir

Source	df	Adj. SS	MS	F
Covariate (Ennis-Weir)	1	2862.16	2682.16	133.12***
Method (adj. for covariate)	1	463.92	463.92	23.02***
Age	1	48.57	48.57	2.41
Gender	1	0.57	0.57	0.03
Method x Age (interaction)	1	14.83	14.83	0.74
Method x Gender (interaction)	1	62.32	62.32	3.09
Age x Gender	1	123.51	123.51	6.13*
Method x Age x Gender (3 way)	1	2.89	2.89	0.14
error	43	866.41	20.15	

Note. ***$\underline{p}$ < .001, *$\underline{p}$ < .05

A closer examination of the age and gender interaction revealed a mean decrease of 5 points from pretest to posttest among male students 22 years old and older ($\underline{n}$ = 8). If older male students were dropped from the study, mean scores for the remaining students would have been experimental group ($\underline{n}$ = 26) pretest $\underline{M}$ = 11.37, posttest $\underline{M}$ = 15.29 and control group ($\underline{n}$ = 18) pretest $\underline{M}$ = 11.22, posttest $\underline{M}$ = 8.86. Mean scores without the older males were quite similar to mean scores with the older males included (see Table 12). The decline in posttest scores in the control group was examined further by conducting t-tests on pretest and posttest scores for each group. The experimental group scored 3.28 points higher on the posttest than they did on the pretest, and this difference was significantly different at $\underline{t}$ (1, 27) = 3.74, $\underline{p}$ < 0.0008. Control group means dropped by -2.63, significant at $\underline{t}$ (1, 21) = -2.49, $\underline{p}$ < 0.02. Further examination of data and discussion of this decline in posttest scores for the control group appears in Chapter V.

The effect size of the difference in outcome on the Ennis-Weir was calculated at Cohen's $\underline{f}$ = .83, or a difference of almost 1 standard deviation between the two groups. An increase of over three points is also likely to be of practical significance on a critical thinking test with a range of –9 to +29 points. For an effect size this large with a sample size of 23 (smallest sample) and α = .05, the power of the statistical test was estimated at .99 (Stevens, 1990, Table C.2).

Dispositions Toward Critical Thinking

Research questions. The following three research questions are addressed

in this section:

Will a group of community college history students who receive training

in Paul's model for critical thinking differ in their attitudes and dispositions

toward critical thinking from a group of similar students not receiving explicit

instruction in critical thinking?

Will there be a statistically significant difference in student performance

by method of instruction according to age (under 22, 22 or over)?

Will there be a statistically significant difference in student performance

by method of instruction according to gender?

Descriptive statistics. Pretest and posttest descriptive statistics for the

California Critical Thinking Dispositions Inventory (CCTDI) are reported in

Table 16. Descriptive statistics showed mound-shaped, roughly symmetrical

distributions of scores with the exception of the experimental pretest group which

Table 16.

Distribution of CCTDI Scores by Method of Instruction

Measures	Experimental (n = 29)		Control (n = 23)	
	Pretest	Posttest	Pretest	Posttest
M	296.03	297.66	296.96	302.04
SD	27.42	32.09	26.72	31.51

had a kurtosis of 2.80. Variances were within the acceptable 1:1.5 ratio. These results indicated that scores could be considered roughly normally distributed for both experimental and control groups. The maximum score on the CCTDI is 420, while scores above 350 are considered relatively strong and scores below 280 are considered relatively weak. Pretest and posttest scores for both experimental and control groups fell within the range between relatively strong and relatively weak. Only minimal changes between pretest and posttests scores could be observed in either experimental or control groups.

Table 17 displays mean scores on the CCTDI by method of instruction and age. Scores of all groupings of students by method and age were similar and showed little change pretest to posttest. All means fell within the range established by test authors as between relatively strong and relatively weak. Instructional method had no apparent effect on students' CCTDI scores by age.

Table 17.

Means and Standard Deviations on the CCTDI by Method of Instruction and Age

	Experimental (n = 29)					Control (n = 23)				
	Pretest			Posttest		Pretest			Posttest	
Group	M	SD	n	M	SD	M	SD	n	M	SD
Under 22	293.29	29.75	21	291.10	33.05	291.80	24.53	15	296.40	28.34
22 and over	303.25	19.89	8	314.88	23.03	306.63	29.60	8	312.63	36.30

Table 18 displays mean scores on the CCTDI by method of instruction and gender. Scores of students by method and gender were similar and showed little change pretest to posttest. The largest change was noted among males in the control group. Their mean score was 11.78 points higher on the posttest than on the pretest, a relatively small gain on an instrument with a possible high score of 420. All means fell within the range established by test authors as between relatively strong and relatively weak. Instructional method had no apparent effect on students' CCTDI scores by gender.

The California Critical Thinking Dispositions Inventory provides both a total score and scores on seven scales. Scale scores were obtained and analyzed along with total scores. Table 19 shows means and standard deviations for each of the seven scales composing the total score for experimental and control groups. The maximum score for each scale is 60. Scores above 50 are considered relatively strong and scores below 40 are considered relatively weak. Mean scores

Table 18.

Means and Standard Deviations on the CCTDI by Method of Instruction and Gender

| Group | Experimental (n = 29) | | | | | Control (n = 23) | | | | |
| | Pretest | | | Posttest | | Pretest | | | Posttest | |
	M	SD	n	M	SD	M	SD	n	M	SD
Female	301.10	21.54	20	299.70	28.85	298.57	25.82	14	300.00	31.78
Male	284.78	36.37	9	293.11	39.92	294.44	29.46	9	305.22	32.73

generally fell within the range of scores considered by the test authors to be

between relatively strong and relatively weak. The highest scale scores for both

groups were for inquisitiveness. The lowest scale scores, again for both groups,

were in truth-seeking. Truth-seeking was the only scale score that fell slightly

below the 40 point cutoff and was thus considered relatively weak. As with the

total scores on the CCTDI, mean scale scores did not show any important changes

from pretest to posttest, and changes did not vary statistically between

experimental and control groups.

Inferential statistics for dispositions toward critical thinking. Assumptions

for ANCOVA (analysis of covariance) were examined for the CCTDI.

Table 19.

Means and Standard Deviations on CCTDI Scales

	Experimental ($\underline{n} = 29$)				Control ($\underline{n} = 23$)			
	Pretest		Posttest		Pretest		Posttest	
Scale	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$
Truth-seeking	37.45	5.19	37.10	5.60	35.91	5.31	36.91	5.21
Open-mindedness	41.86	5.65	42.10	5.92	41.09	6.01	42.61	5.65
Analyticity	42.69	6.04	43.72	5.71	44.09	5.99	44.83	6.70
Systematicity	42.28	5.57	40.83	7.82	42.74	7.11	42.96	7.59
CT Self-confidence	42.41	7.43	43.45	5.85	41.87	6.74	43.17	8.13
Inquisitiveness	45.28	6.96	46.03	6.80	46.43	5.88	46.35	6.42
Cognitive Maturity	44.07	6.10	44.41	7.77	44.83	5.81	45.22	5.95

Independence of scores was previously accepted, and the assumption of normality

was established in the section on descriptive statistics for the CCTDI. Brown and

Forsythe's Test (Brown & Forsythe, 1974) supported the assumption of equality

of variance for method, age, and gender, and the test of linearity indicated a linear

relationship. Homogeneity of regression was supported for the posttest since there

was no significant interaction between pretest and treatment, $\underline{F}$ (1, 49) = 0.13,

$\underline{p}$ = .72. Cronbach's alphas of .86 pretest and .90 posttest indicated that the

assumption of no measurement error was tenable. It was determined that the

assumptions of ANCOVA were not violated for the CCTDI. Table 20 displays

Table 20.

Analysis of Covariance for the CCTDI

Source	df	Adj. SS	MS	F
Covariate (CCTDI)	1	29752.78	29752.78	67.92***
Method (adj. for covariate)	1	162.51	162.51	0.37
Age	1	971.41	971.41	2.22
Gender	1	640.62	640.62	1.46
Method x Age (interaction)	1	379.69	379.69	0.87
Method x Gender (interaction)	1	12.22	12.22	0.03
Age x Gender	1	58.36	58.36	0.13
Method x Age x Gender (3 way)	1	108.41	108.41	0.25
Error	43	18836.50	438.06	

Note. ***p < .001

results from an analysis of covariance of the posttest CCTDI total score with the pretest measure as covariate. No significant differences were found by method, age, or gender (Experimental Adj. $\underline{M}$ =302.53; Control Adj. $\underline{M}$ = 303.51). ANCOVAs were also run for scores on individual scales. Again, no significant differences were found by method or for method by age or gender. Older students scored significantly higher than younger students on the CT Confidence Scale and on the Analyticity Scale, but the results were not statistically different by method. The instructional treatment appeared to have no effect on students' dispositions toward critical thinking as measured by the CCTDI. ANCOVAs were also run on scale scores but showed no statistically significant effects.

The effect size of the difference in outcome on the CCTDI was calculated at Cohen's $\underline{f}$ = .12, indicating a small non-significant effect size.

Achievement in Knowledge of History Content

Research questions. The three following research questions are addressed in this section:

Will a group of community college history students who receive training in primary document interpretation according to Paul's critical thinking model perform better on a test of history content knowledge than a group of similar students not receiving explicit instruction in critical thinking? Will there be a statistically significant difference in student performance by method of instruction according to age (under 22, 22 or over)?

Will there be a statistically significant difference in student performance by method of instruction according to gender?

Table 21.

Distribution of Scores on the History Content Exam by Method of Instruction

	Experimental (n = 29)		Control (n = 23)	
Measures	Pretest	Posttest	Pretest	Posttest
M	14.66	25.28	13.39	23.87
SD	4.26	4.85	5.01	5.29

Descriptive statistics. Distributions of scores on the 35 questions selected from two forms of the College Board Test in American History and Social Studies (History Content Exam) are reported in Table 21. Descriptive statistics across groups suggested normal distributions, mound shaped and roughly symmetrical. The most extreme kurtosis value (1.64) was found among the control group posttest scores and was not considered unacceptable. Both groups showed approximately equal variances. Scores were slightly lower in the control group both pretest and posttest, but mean scores in both groups increased by approximately the same amount (10.5 points) from pretest to posttest.

Experimental and control group means by method of instruction and age appear in Table 22. Students under 22 showed similar scores both pretest and posttest, but students 22 and older showed more variation by group. Among older students, both pretest and posttest scores were lower in the control group. The largest increase pretest to posttest was among students 22 and older in the experimental group (11.62 points).

Table 22.

Means and Standard Deviations on the History Content Exam by Method of

Instruction and Age

| Group | Experimental (n = 29) | | | | | Control (n = 23) | | | | |
| | Pretest | | | Posttest | | Pretest | | | Posttest | |
	M	SD	n	M	SD	M	SD	n	M	SD
Under 22	14.38	4.24	21	24.62	4.78	14.53	5.74	15	24.73	4.27
22 and over	15.38	4.53	8	27.00	4.93	11.25	2.19	8	22.25	6.86

Experimental and control group means by method of instruction and

gender appear in Table 23. Females in the control group had the lowest pretest

scores (M = 12.71). Males in the experimental group had both the highest pretest

scores (M = 16.00) and the greatest increase in scores pretest to posttest, 11.33

points. The other groupings had similar difference scores, with at least a 10 point

increase in each group pretest to posttest.

Inferential statistics for achievement in history content knowledge.

Descriptive results were examined to determine if they supported the assumptions

necessary for ANCOVA. Independence of scores has already been accepted, and

the assumption of normality was addressed in the previous section. Brown and

Forsythe's Test (Brown & Forsythe, 1974) supported the assumption of equal

variances by method, gender, and age. A test of linearity indicated that the

relationship between the covariate and criterion was linear. Internal consistency

Table 23.

Means and Standard Deviations on the History Content Exam by Method of

Instruction and Gender

	Experimental (n = 29)					Control (n = 23)				
	Pretest			Posttest		Pretest			Posttest	
Group	M	SD	n	M	SD	M	SD	n	M	SD
Female	14.05	4.12	20	24.35	5.37	12.71	5.78	14	23.29	5.62
Male	16.00	4.50	9	27.33	2.65	14.44	3.54	9	24.78	4.92

reliability on the 35 question History Content Exam was K-R 20 = .69 on the

pretest and K-R 20 = .77 on the posttest, close enough to indicate that the

assumption of no measurement error was tenable. There was no significant

interaction between pretest and treatment for the posttest, $F(1,49) = 0.01$,

$p = 0.94$, indicating no violation of the assumption of homogeneity of regression

for the posttest. In conclusion, the assumptions of ANCOVA were not violated

when the posttest was used as the outcome variable.

Table 24 displays results from the ANCOVA on knowledge of history

content posttest scores with the pretest as covariate. No significant differences

were found in mean scores by method, gender, or age. No apparent treatment

effect was obtained on history content scores.

The effect size of the difference in outcome on the History Content

Instrument was calculated at Cohen's $f = .14$, indicating a small effect size that

was not statistically significant.

Table 24.

Analysis of Covariance for the History Content Exam

Source	df	Adj. SS	MS	F
Covariate (Content)	1	517.44	517.44	32.43***
Method (adj. for covariate)	1	3.70	3.70	0.23
Age	1	6.81	6.81	0.43
Gender	1	13.79	13.79	0.86
Method x Age (interaction)	1	10.44	10.44	0.65
Method x Gender (interaction)	1	2.78	2.78	0.17
Age x Gender	1	26.93	26.93	1.69
Method x Age x Gender (3 way)	1	33.87	33.87	2.12
Error	43	686.01	15.95	

Note. ***$p < .001$

Relationships Among Achievement in Source Analysis and Intepretation, Argumentative Analysis, Critical Thinking Dispositions, and Knowledge of History Content

A correlation matrix showing the relationships among posttest scores on each of the four instruments is displayed in Table 25. Each instrument showed a positive relationship with the other three instruments, although the strength of those relationships varied. Scores on the DBQ and the History Content Exam showed a moderate correlation, Pearson $r = .57$. Correlations among the other instruments were small.

Table 25.

Correlation Matrix for Outcome Variables

	DBQ	EW	CCTDI	Hist. Cont.
DBQ	--			
EW	.36**	--		
CCTDI	.19	.31*	--	
Hist. Cont.	.57***	.38**	.35*	--

Note. ***$p < .001$, ** $p < .01$, *$p < .05$

Interviews

During the 6th and 11th weeks of the semester, the researcher conducted interviews with randomly selected students. Four students from the control group and three students from the experimental group were each interviewed twice. A fourth student from the experimental group participated in the first interview but dropped the class before the second interview was conducted. Another student (randomly selected) from the dropped student's section participated in the second interview. The demographic breakdown of the interviewees was as follows:

Experimental	Control
1E white female over 22	1C white female under 22
2E white female under 22	2C white male under 22
3E white female under 22/	3C Hispanic female under 22
black female under 22	
4E white male over 22	4C white female under 22

Interview questions and complete transcripts are found in Appendix F.

Student interviews were examined for three areas of responses: 1) the

comparative difficulty students in experimental and control groups experienced in

completing primary source assignments, 2) abilities to define critical thinking, and

3) recognition of possible uses outside the classroom for skills gained in preparing

primary source assignments. Specific questions were asked to obtain relevant

responses, but when students included information pertinent to these issues in

their answers to other questions, that response was included in the results. This

type of information adds to an understanding of the effectiveness of Richard

Paul's model for critical thinking, and, more generally, of students' understanding

of and receptiveness to critical thinking.

The first area of interest was whether students using Paul's model might

find assignments more difficult than students answering textbook questions on the

same readings. In order to obtain an answer to this question, the first interview

question asked students to rate the difficulty of primary source assignments as

very easy, not too hard, somewhat difficult, or extremely difficult. Experimental

students varied in their responses. In the first round of interviews, two

experimental students responded "not too hard," one said hard at first but getting

easier, and the fourth interviewee judged the assignments as "hard to extremely

hard." This last student indicated difficulty understanding the readings themselves

and quit attending the course before the second interview. In the second round of

interviews, the student who replaced her rated the assignments as "not too hard,"

and two other experimental students also responded "not too hard." The fourth

student (experimental) in the second interview noted that the assignments were "easier than. . . at the beginning but . . . still somewhat difficult. It really stretches your mind." In contrast, all four of the students in control groups answered "not too hard" in both the first and second interviews, but further analysis of their responses shows a few limitations to the apparent ease they felt in answering the questions. One student in the control group noted in the second interview that questions were easier to answer than they had been earlier. Another student in the control group pointed to differing levels of difficulty between the two types of questions asked: those under the heading "probing the sources" and those labeled "critical thinking." She stated that the first set of questions was "pretty easy," but found more difficulty in answering the critical thinking questions. Additionally, two students in the control group noted that the amount of reading required to complete primary source assignments was difficult to complete. In summary, students in the experimental sections appeared to find primary source assignments somewhat more difficult, at least at first, than students in the control sections, but control group students did face some challenges in dealing with primary source assignments.

Students were also asked to provide a definition of critical thinking. In question two, students were directly asked for a definition, but question three (and other questions in some cases) also provided students with an opportunity to verbalize their understanding of critical thinking. None of the students provided a clear, concise definition, but most were able to verbalize some elements or characteristics of critical thinking.

Students most frequently mentioned or referred to "thinking more deeply" or "thinking harder," "interpreting meaning," and "analysis." Three experimental students mentioned one or more of the elements of reasoning included in Paul's model. One experimental student also focused on strategies used by historians – citing sources, contextualizaton, and corroboration of differing accounts – when asked to provide a definition of critical thinking. In the first set of interviews, experimental group students verbalized 15 elements or characteristics of critical thinking while students in the control group supplied 8. In the second set of interviews, the experimental group provided 14 aspects of critical thinking while the control group gave 7. Overall, students in the control group used about half as many key terms ($\underline{M}$ = 3.75) in their descriptions of critical thinking as experimental students did ($\underline{M}$ = 7.25). Providing a definition of critical thinking proved more difficult for students in the control group than for students in the experimental group.

The greatest contrast between students in the experimental and control groups was seen when the interviewer asked them to relate what they had learned from analyzing primary source documents that they might be able to apply in everyday situations. In the first interview, experimental group students identified nine applications while students in the control group were unable to think of any. In the second interview, students in the experimental group had seven suggestions for using critical thinking skills while the control group identified four. Combining results from both interviews, the researcher found that students in experimental sections were four times as likely ($\underline{M}$ = 4) as students in the control

group ($\underline{M}$ = 1) to recognize possibilities for transferring critical thinking abilities from the classroom to everyday situations.

Summary of Results

This chapter described statistical results for four instruments: the Document Based Question section from the 1986 AP Examination for United States History, the Ennis-Weir Critical Thinking Essay Test, the California Critical Thinking Dispositions Inventory, and the History Content Exam (Appendix E). Statistically significant differences were found between experimental and control groups on posttest scores on the DBQ and the Ennis-Weir. No differences were found on instruments testing critical thinking dispositions or knowledge of history content. No significant differences were found by method of instruction according to age or gender. Results from interviews with nine students were also presented and indicated that some students in the experimental group found using Paul's model somewhat difficult at first. Experimental group students were better at providing a definition of critical thinking, and they were able to think of more uses for their skills in the real world than students in the control group.

CHAPTER V

DISCUSSION

The primary underlying concern of this study is how higher education can best help students develop their critical thinking abilities. This issue is an important one, since the ability to think critically is traditionally viewed as a fundamental characteristic of an educated person and is also seen by educational reformers as an essential outcome of contemporary education, necessary to meet the demands of citizenship in a democracy and of successful employment in a rapidly changing, highly competitive economy. Despite widespread interest in developing students' critical thinking abilities, both educational reformers and critics of the system contend that students are not being taught to think critically. Among other hindrances, a lack of consensus on a definition of critical thinking, dissenting theoretical bases, and a variety of competing models for developing critical thinking (many untested) currently hamper efforts to include more critical thinking in our nation's classrooms. The purpose of this study was to examine the effectiveness of a general model for critical thinking that can be integrated into the content and activities of an academic course lasting one semester. More specifically, the purpose of this study was to assess empirically the impact of teaching Richard Paul's model for critical thinking on community college students' abilities to think critically about U.S. history and to apply these abilities

in thinking about an everyday reasoning task. Paul's model was chosen because it is firmly grounded in theory, applicable to any problem or issue requiring reasoning, and flexible enough to be integrated into any course content (Foundation for Critical Thinking, 1996; Paul, 1993). Additionally, Richard Paul is a leader in the critical thinking movement whose publications and seminars influence both K-12 educators and college and university instructors, yet empirical tests of his model have not previously been reported in the literature.

To address the issue of the effectiveness of Paul's model for developing essential critical thinking abilities, the researcher attempted to answer the following questions:

1. Will a group of community college history students who receive explicit training in critically analyzing and interpreting historical documents according to Paul's critical thinking model perform better on a test that requires them to analyze and synthesize a set of primary sources than a group of similar students not receiving explicit instruction in critical thinking?

2. Will a group of community college history students who receive training in Paul's critical thinking model perform better on a task requiring evaluation of arguments on a contemporary issue than a group of similar students not receiving explicit instruction in critical thinking?

3. Will a group of community college history students who receive training in Paul's model for critical thinking differ in their attitudes and dispositions toward critical thinking from a group of similar students not receiving explicit instruction in critical thinking?

4. Will a group of community college history students who receive

training in primary document interpretation according to Paul's critical thinking

model perform better on a test of history content knowledge than a group of

similar students not receiving explicit instruction in critical thinking?

5. Will there be a statistically significant difference in student

performance by method of instruction according to age (under 22, 22 or older)?

6. Will there be a statistically significant difference in student

performance by method of instruction according to gender?

This chapter discusses results of the study as they relate to the research

questions. Following a discussion of the findings for each of the six questions and

a brief summary of conclusions, this chapter reviews the limitations of the study,

addresses possible implications for practice, and makes recommendations for

areas of future research and for professional development.

Discussion of Research Questions

Research question one. This question addressed the effect of explicit

training in Paul's model on students' abilities to analyze, interpret, and write an

essay on a set of primary source documents. In other words, this question asked if

students who learned to use Paul's model for critical thinking to analyze primary

documents in a U. S. history course would do a better job of "thinking like a

historian" than would students who were taught in a more traditional manner. To

address this question, the researcher integrated Paul's model for critical thinking

into the experimental sections by (a) teaching the model explicitly, (b) providing

handouts of the model ("Critical Thinking and History" packet), (c) training

students to use the model to analyze primary source documents and historical

problems, (d) giving assignments that required students to use the model

("Reasoning about History" forms) and (e) conducting classroom discussions

according to the elements and standards contained in Paul's model. The

"Reasoning about History" forms (Figure 2 in Chapter III) are based on Paul's

eight elements of reasoning. The form adapted Paul's basic model to the specific

context of history by including three strategies commonly used by historians to

interpret primary source documents (Wineburg, 1991a). Over a period of several

weeks, students in the experimental group were taught to use the elements of

reasoning to analyze historical documents, and they were given numerous

assignments and multiple opportunities to use the "Reasoning about History"

form.

Students in the control group read the same primary source documents as

students in the experimental group, but they were not given the critical thinking

packets or the "Reasoning About History" worksheets, nor were they taught to

apply Richard Paul's model for critical thinking to document analysis. Rather,

they answered questions on the documents provided by the authors of the source

reader (i.e., a required text for the course). With the exception of training in Paul's

model, all sections in the study used the same textbooks, participated in the same

activities, and were taught in the same manner.

To test the effectiveness of the model in teaching students to think

historically, or to think like a historian, students in both groups were given the

Document Based Question (DBQ) section of a disclosed version of the Advanced

Placement Examination in U. S. History as part of their final exam. The DBQ

requires students to read a set of documents and respond to an essay question, incorporating both their knowledge of U.S. history and their interpretations of the documents. Scores on the DBQ served as data for determining if students taught to use Paul's model were better able to think like historians than students who were not trained to use Paul's model. Data was analyzed through univariate statistics and an ANCOVA, using student scores on a test of knowledge of history content as a covariate. The strength of the difference between the two groups' means (Adj. $\underline{M}$ = 5.58 experimental, 4.20 control) suggests than Paul's model had an educationally and statistically significant impact on students' abilities to think historically. The difference was significant ($\underline{F}$ = 9.08, $\underline{p}$ = .004) and the effect size was large (Cohen's $\underline{f}$ = .48). While males scored higher than females at a statistically significant level, the interaction between method and gender was not significant. In other words, the model did not benefit one gender more than the other.

DBQ scores in the preliminary (background) study provide some basis of comparison for these scores. In the preliminary study, a small sample of students ($\underline{n}$ = 7) who were taught to use Richard Paul's model to analyze historical documents took the DBQ both as a pretest ($\underline{M}$ = 3.20) and as a posttest ($\underline{M}$ = 4.14). When compared with findings in the background study, the difference in the means between the experimental and control groups' adjusted mean scores in the principal study, 1.38 points, is somewhat larger than the difference found between pretest and posttest scores in the preliminary study (.94). Mean posttest scores are higher in the principal study as well. One possible explanation for

lower scores in the background study may rest in the small sample size (perhaps unrepresentative). Also, Paul's model was integrated more closely with source document assignments in the principal study than in the preliminary study: Students were given more explicit instruction in critical thinking, they received expanded "Critical Thinking and History" packets, and assessment standards for the essay and the structured controversy were explicitly related to Paul's critical thinking model. These adjustments may account for higher posttest scores in the experimental group when compared to findings in the background study. The fact that the control group's posttest scores in the principal study are slightly higher than the posttest scores in the preliminary study (students who did receive instruction in Paul's model) probably reflects both a difference in groups and the fact that the control group also participated in activities requiring critical thinking.

Experimental and control groups in the principal study had similar pretest and posttest mean scores on the test of history knowledge, the covariate for the DBQ ANCOVA. This finding indicates than the difference in DBQ scores was not a result of one group having a greater knowledge of history than the other but rather an outcome of their enhanced abilities to interpret unfamiliar historical documents. Control group students, who were experienced in answering questions supplied by the source reader, evidently had greater difficulty than the experimental group in interpreting the documents and connecting them with their knowledge of historical events.

Interviews with randomly selected students from both control and experimental groups indicate that at least some students reported that using the

elements of reasoning to analyze documents is more difficult, at least initially, than answering questions provided by the authors of the source reader. In the first round of interviews, no students in the control group indicated having difficulty answering questions on primary source documents, but two students from the experimental section did. By the second round of interviews, frustration with assignments requiring students to apply Paul's model for critical thinking to primary documents appears to have diminished, as students in the experimental group became more familiar with the using the elements of reasoning. No students in the second round of interviews claimed to find the assignments difficult. Undoubtedly, for many students, answering questions that someone else has written is less intimidating than trying to analyze historical documents by using the elements of reasoning. Introducing several of the more familiar elements to students first, then gradually requiring them to use the less familiar elements, appears to have helped students adjust to using the model. Allowing collaboration in small groups after assignments were completed and treating assignments as daily grades with credit for effort also provided students with the support many needed in their early attempts to apply these elements of analysis to unfamiliar readings. The fact that students were held accountable for completing these assignments increased participation and, therefore, gave students more practice in using the model.

Results from the two statements added to the "Student Perception of Instruction" forms that related to students' responses to primary source assignments (Appendix B) indicate that student reactions in both groups ranged

from confidence to frustration when trying to complete primary source assignments. While students in the experimental group may have felt a higher level of confusion initially, by the time students rated the instructor (about half-way through the course) an approximately equal number of students in both groups felt confident while other students still found the assignments difficult.

If one of the expected outcomes for students in college courses is an increased ability to think with greater expertise within the context of the discipline, then integrating Paul's model into course content appears to be an effective approach to achieving this objective, at least in history. The 1.4 point higher mean score on the DBQ (0 to 9 scale) among students who had training and practice in using Paul's model is certainly of practical importance and indicates that this general model can be effective in helping students increase their ability to think historically. While some students found the model challenging at first, through gradual training and frequent practice in using the model as well as through careful attention to student concerns about their abilities to complete assignments, most students became at least moderately proficient in using the model. The model appears to be equally effective for traditional-age college students and for older students, as well as for both females and males.

Research question two. While thinking well in an academic discipline is important for college level students, of greater concern to many people is whether students transfer the skills they learn in academic settings to real world problems. The second research question addressed this issue. Students in the experimental group were trained in a general model for critical thinking that can be used in

everyday reasoning tasks as well as in academic assignments. As indicated in the section on research question one, the researcher integrated Paul's model for critical thinking into the experimental sections by (a) teaching the model explicitly, (b) providing handouts of the model ("Critical Thinking and History" packet), (c) training students to use the model to analyze primary source documents, (d) giving assignments that required students to use the model ("Reasoning about History" forms) and (e) conducting classroom discussions according to the elements and standards set forth in the model. The "Reasoning about History" forms (Figure 2 in Chapter III) are based on Paul's eight elements of reasoning, which are general in nature and not limited to history. The "Critical Thinking and History" packets (See Appendix A) also contain mainly general reasoning strategies, including reasoning fallacies. While the subject matter that students thought about in this study was history, the elements and standards of reasoning are universal and applicable to any subject matter.

To test students' abilities to apply the critical thinking skills acquired through reasoning about historical documents to everyday reasoning tasks, students in both groups took the Ennis-Weir Critical Thinking Essay Test during the first two weeks of the course and again during the last week of the course. The Ennis-Weir is presented as a letter to the editor on a parking problem faced by a small town. Students are asked to respond to each argument made by the concerned citizen writing the letter and finally to assess whether the letter as a whole provides adequate support for the author's proposed solution.

Results on the Ennis-Weir showed that students in the experimental group performed at a statistically significantly higher level than students in the control group ($\underline{F}$ = 23.02, $\underline{p}$ < 0.0001), and findings indicated a large effect size (Cohen's $\underline{f}$ = .83). While pretest means were similar, posttest means increased by 3.28 points in the experimental group but decreased by 2.63 points in the control group. Male students 22 years old and over appeared to account for the largest drop in posttest scores in the control group, but no statistically significant interactions were found between method of instruction and age or gender. By way of comparison, the experimental group's mean increase is slightly smaller than the increase (4.06 points) found in the preliminary study in Fall, 1997, across five sections of students in U. S. History 1877 to the Present, World Civilizations to 1500, and Teaching Diverse Populations ($\underline{n}$ = 93). These results can also be compared with findings in a study at Baker University (Hatcher, 1995) in which freshmen who completed a two semester sequence in English Composition and Critical Thinking between 1991-1998 ($\underline{n}$ = 977) averaged an increase in mean scores of 5.3 on the Ennis-Weir. It is important to note that the Baker University study also included a comparison group, students in a course in introductory logic at a state university, who showed a mean decrease of 1.4 points on the Ennis-Weir. Thus, while a decrease in scores in a comparison group is not unheard of, the decrease found in this research study deserves further consideration.

The decrease in control group means on the Ennis-Weir provided a substantial proportion of the difference in pretest to posttest scores on the instrument between the experimental and control groups in the present study. An

argument could be made that the large difference score was an artifact of this decrease in scores for the control group. To further test the strength of the experimental group's increase on the Ennis-Weir, t-tests were run. Results indicated that the experimental group scored significantly higher on the posttest than on the pretest ($\underline{t}$ = 3.74, $\underline{p}$ < 0.0008) and that the control group scored significantly lower on the posttest when statistically compared to their pretest score ($\underline{t}$ = -2.49, $\underline{p}$ < 0.02). Even if mean scores in the control group had remained approximately the same from pretest to posttest (as expected), the experimental group still achieved a significant improvement in its scores.

These results on the Ennis-Weir provided the researcher with an opportunity to reflect on the importance of providing adequate motivation for students to do their best when completing such tasks. When the drop in means within the control group on the Ennis-Weir was first observed, a number of possibilities were explored in an attempt to understand and account for the decrease in mean scores. It was determined that four students dropped more than one standard deviation, and four additional students dropped more than one-half standard deviation when all pretest scores were compared with posttest scores. These eight students were evenly divided between the two sections composing the control group. Four were under 22 years old and four were 22 or older; three were females and five were males. Data provided by these students were checked for accuracy of scoring, consistency of attendance, and course grades, but no adequate explanations were found for the decrease in performance. In comparing individual responses on the pretests and posttests of these eight students, the

researcher observed that when taking the posttest, these students at times failed to pick up on reasoning errors that they had initially noted on the pretest, perhaps indicating a lack of careful attention to the task at hand. It appears quite possible that this decline in scores was an issue of motivation, or, rather, lack of motivation to write a response that took time, energy, and thought. While all of the students participating in the study were given a short pep talk about the importance of the instrument and were awarded points on their daily assignment grade, the fact remains that the posttest was administered at the end of the term and students were faced with writing an essay that counted relatively little toward their final course grade.

Motivation is a problem for testing of many kinds under many different circumstances. Baker University addressed this issue by including the Ennis-Weir as part of the final examination for its English Composition and Critical Thinking Course. While this approach may have worked at Baker, it did not seem appropriate for a history course or for students (control group) who had not had explicit training in critical thinking. Perhaps assigning more points to the activity would have provided greater motivation for participants in the present study, but assigning points on the basis of how well students performed (as in the Baker study) did not seem fair to students in the control group. Since Baker University did not use a control group, no students in that study were put at such a disadvantage.

Along a slightly different line, it might be noted that there is no reason to believe that the motivation to do one's best, and conversely the motivation to

simply do the assignment, was any different in the control group than in the experimental group. In other words, if the control group means might be described as artificially low due to a lack of adequate motivation, it may be equally likely that the experimental group scores are similarly artificially low, and the difference found between the two group means thus remains an accurate reflection of the effectiveness of Paul's approach to critical thinking. This kind of speculation examining a few "what if" scenarios can be explored further by the thoughtful "manipulation" of data.

1. If students in the control group who scored more than 4 points lower on the posttest than on the pretest (the maximum range of points for one paragraph) were dropped from the study, the result would be as follows. The control group had eight students, approximately one-third of the sample, in this category, four from each section. These eight students dropped an average of 8.56 points from pretest to posttest. The remaining 15 students in the control group would have had a mean score of 9.53 pretest and 10.07 posttest, an increase of .54 points from pretest to posttest. Thus, even if the eight students who lost the most points from pretest to posttest were dropped from the control group, the difference in the control group mean scores from pretest to posttest would still remain significantly less than the increase in the experimental group means of 3.28 points pretest to posttest.

2. If students in the control group who scored more than 8 points lower on the posttest than on the pretest (the maximum range of scores for two paragraphs) were dropped from the study, the result would be as follows. The control group

had four students, approximately one-sixth of the sample, in this category, two from each section. These four students dropped an average of 10.38 points from pretest to posttest. The remaining 19 students in the control group would have had a mean score of 11.18 pretest and 10.18 posttest, a decrease of one point. Again, these results remain significantly less than the increase observed in the experimental group of 3.28 points pretest to posttest.

3. In the experimental group, the largest decrease was –3.5 points, so no student lost more than four points, much less eight. Only six students, about one-fifth of the sample, had lower scores on the Ennis-Weir posttest than on their respective pretest; the average drop among these six was 2.25 points. One additional student posted no gain. To provide an adequate comparison with the eight students (one-third of the sample) in the control group whose scores decreased by an average of 8.56 points, these seven students from the experimental group plus three additional students whose scores increased slightly would have to be dropped from the experimental group mean. If the scores of these 10 students were dropped (one-third of the experimental sample), the pretest mean of the remaining 19 students would have been 9.79 and the posttest mean would have been 15.32, an increase of 5.53 points. This difference compares quite favorably with the .54 point increase that would occur if the same percentage of students were dropped from the control group. It also approaches the 5.97 point difference in the adjusted means scores for the Ennis-Weir found in the research study.

4. Alternatively, dropping the one-sixth of students (five) in the experimental group who showed the largest decreases from pretest to posttest would have the following results. The lowest five students in the experimental group lost an average of 1.3 points. If these students were dropped from the study, pretest scores in the experimental group would have been 11.08, and posttest scores would have been 14.98, a gain of 3.90 points. This compares to a decrease of 1 point in the control group if one-sixth of the students (those who posted the largest declines) were dropped. Again, the difference is approximately 5 points, and the experimental group shows a much higher performance level than the control group.

While examination of manipulated mean scores such as these may not be statistically defensible, they do show that if diminished student motivation was indeed a major factor in contributing to decreases in mean scores from the pretest to the posttest, the difference in the Ennis Weir scores between the experimental and control groups remains more or less constant, and the ANCOVA findings can be accepted with confidence. It appears that integrating Richard Paul's model into a college history course had a strong positive effect on students' abilities to think critically about an everyday reasoning task. Whether this difference resulted from explicit instruction and repeated practice in the model in general or from some particular aspect of training in the model – such as instruction in identification of reasoning fallacies – is a question for future research.

Student interviews also provided some important insights into students' abilities to transfer the skills they learn in academic settings to the real world. As

reported in Chapter IV, students in the experimental group appeared better able to

verbalize components of critical thinking and indicated a better grasp of the

concept. In response to the question "Can you think of some examples in which

abilities you've gained by reading and analyzing primary source documents relate

to practical situations in your life," students in the experimental group were able

to verbalize four times the number of everyday applications of the skills as control

group students (an average of four among experimental students, one among

control students). Several of the experimental students not only listed possible

uses but also stated that they were using these skills in their jobs and in

relationships. While being able to verbalize component skills and possible uses is

hardly the same as actually using a skill, these responses offer hope that at least

some students were able to transfer important skills learned in the classroom to

everyday situations.

Research question three. One aspect of critical thinking that increasingly

appears as an integral part of various models for critical thinking, including

Richard Paul's model, is a person's "critical spirit," or general dispositions toward

critical thinking. While an individual may possess skills needed for good

reasoning, he or she may not chose to use them or may use them in a self-serving

way. Conversely, many theoreticians maintain that a person who is adept at

critical thinking would be disposed toward using critical thinking in his or her

personal, professional, and civic affairs. The third research question addressed

this issue. Would students who were trained in Paul's model show improvement

in their dispositions toward critical thinking over the course of a semester?

As described in the previous two sections, Paul's model was explicitly taught in the experimental sections, and students had numerous opportunities to practice using the model. However, some aspects of Paul's model were emphasized more than others due to time limitations. The elements of reasoning were emphasized most explicitly and frequently, followed by the standards. The intellectual traits of a critical thinker, the aspect of Paul's model most closely related to critical thinking dispositions, were emphasized least. Traits were introduced, but they were explicitly discussed on only two or three occasions.

To test students' dispositions toward critical thinking, students in both groups took the California Critical Thinking Dispositions Inventory during the first two weeks of the course and again during the last week of the course. Results from statistical analyses of the scores on this instrument showed no significant differences between the experimental and control groups. Further, posttest means were not significantly different from pretest means in either group (Pretest: Experimental $\underline{M}$ = 296, Control $\underline{M}$ = 297; Posttest: Experimental $\underline{M}$ = 298, Control $\underline{M}$ = 302). It appears that taking a single history course that includes explicit instruction in Paul's model but does not emphasize intellectual traits of the critical thinker has no effect on students' dispositions toward critical thinking.

The CCTDI is relatively new, and few studies are currently available for comparison purposes. Students' mean scores in the current study, both overall scores and scale scores, were consistent with results from preliminary studies cited for comparison purposes in the CCTDI Test Manual. The authors advise caution, however, and insist that while their results are useful as examples and for

comparison purposes, they should not be considered norms. The "representative sample" ($N = 267$) of undergraduates who completed the CCTDI had a mean total score of 304, compared to the mean total score of 300 in the current research study. These means are also consistent with findings in this researcher's preliminary study in Fall 1997 (Pretest $M = 303$, Posttest $M = 304$). One recent study provides an opportunity to compare total scores with a different group. S. E. Anderson (1998) and colleagues used the CCTDI to test the critical thinking dispositions of nursing faculty from 11 schools ($N = 115$), then correlated those results with scores on the California Critical Thinking Skills Test (Facione, 1992) and a variety of demographic factors. The mean score for nursing faculty on the CCTDI was 331, approximately 31 points higher than the total mean score for students participating in the present study. Higher scores would be expected in a group of highly educated instructors in a discipline that requires explicit training for critical thinking for credentialing purposes. While S. E. Anderson had expected nursing faculty to score above 350, indicating strong dispositions toward critical thinking, these results do provide a basis of comparison with the undergraduates who participated in the present study.

The test manual for the CCTDI gives no indication that a change in critical thinking dispositions might be expected over the course of a single semester, nor does it suggest instructional methods or materials that might lead to a change in students' critical thinking dispositions. On the other hand, it does hypothesize a close connection between critical thinking skills and critical thinking dispositions. Thus the researcher expected that if students in the experimental group improved

in their abilities to think critically, it was also reasonable to anticipate higher scores on the CCTDI. The results of this study show otherwise: More than one semester of explicit instruction and practice in critical thinking skills may be needed to improve students' scores on the CCTDI. Perhaps, if the "critical spirit" had been a main focus of this study and greater classroom emphasis had been placed on critical thinking dispositions and habits of mind, significant changes might have occurred.

On the other hand, it may be that even an intensive focus on dispositions toward critical thinking would not have made a significant impact over the course of a single semester. Studies in developmental psychology, discussed in Chapter II of this document, have shown that changes in underlying beliefs and attitudes often occur very slowly; thus developmental issues may have contributed to the lack of change in the CCTDI scores. Another possible explanation for the lack of change in experimental students' scores may be revealed by close examination of some of the statements included in the inventory. Several of the statements have the potential for being rated lower by a student who has received explicit training for critical thinking than by a student who has not received any critical thinking instruction. Consider two examples. Students who are completing a course that included explicit training in critical thinking might rate themselves lower on the statement "I take pride in my ability to understand the opinions of others," than they did before taking the course. That is, training for critical thinking might make students more aware of limitations in their abilities (or efforts) to understand other points of view. While over time they might work to improve

their abilities to understand the opinions of others and thus eventually rate

themselves high on this statement, a single semester of training might only be

enough to help them recognize their current limitations. A similar pattern of

development in critical thinking might occur with the statement "You could

describe me as logical." Students who have recently completed a course

incorporating critical thinking might feel less confident about their ability to use

logic to reason through problems after receiving explicit training in the skills of

critical thinking than before that training took place. Only after considerable

training and practice, might they again feel confident in their abilities to use logic

to solve problems.

Whether due to not enough emphasis on dispositions in the instructional

method employed, on larger developmental issues, possible limitations of the

instrument itself, or some combination of those and other factors, integrating

Paul's model in a semester long history course did not appear to be effective in

increasing students' scores on the CCTDI.

Research question four. One criticism often made toward emphasizing

critical thinking in college classrooms has centered on the concern over whether

intensively teaching a skill such as critical thinking might reduce the amount of

content learning in the discipline. After all, teaching for critical thinking takes

time, and that time must be found by appropriating time that might be spent on

other curriculum possibilities. On the other hand, teaching course content through

critical thinking might be expected to provide deeper knowledge acquisition and

actually increase students' abilities to retain content knowledge. The fourth

research question addressed these issues. Would students who were trained in Paul's model perform at the same level as students who focused more on content acquisition?

To answer this question, a multiple-choice History Content Exam was given to students as a pretest and again as a posttest. This instrument was composed of 35 items selected from disclosed versions of College Board Achievement Test in American History and Social Studies. The researcher decided to select questions from standardized instruments because the individual items had all been carefully validated, pretested, and revised when necessary. The 35 questions chosen for use in this study reflected the content of the course and provided a variety of difficulty levels in order to avoid a ceiling effect.

Resulting data indicate that students in both experimental and control groups increased their scores on the History Content Exam by an average of approximately 10.5 points. Mean scores in the experimental group increased from 14.66 to 25.28, and control group mean scores increased from 13.39 to 23.87. This increase is slightly smaller than the 12.94 difference score observed in the preliminary study (Pretest $\underline{M}$ = 12.20, Posttest $\underline{M}$ = 25.14).

These results can be questioned from at least two standpoints: Why did the experimental group do as well as the control group, and why did the experimental group not do better than the control group? First, as stated earlier in this section, it is not unusual to hear reservations about teaching for critical thinking based on a concern that there would be less instructional time for student acquisition of course content. From this standpoint, the fact that the experimental and control

groups performed equally well on the test of content knowledge provides an indication that knowledge gains in subject matter mastery do not necessarily suffer when critical thinking is emphasized. The time spent in the experimental group on training for and practice in critical thinking did not negatively affect students' end of course knowledge of history content.

On the other hand, some would argue that a deeper, more thoughtful approach to content, as might be expected to occur in a course emphasizing critical thinking, should result in higher achievement in content knowledge. In response to this expectation, two points relate to this study. First, it is important to keep in mind that both experimental and control groups participated in some critical thinking activities. Among other course requirements, control groups analyzed historical causation; examined historical events by their political, economic, social, and cultural characteristics; compared the political, economic, social, and cultural aspects of different periods of U. S. history; participated in a structured controversy in which they judged whether or not to take the Philippines as a colony following the Spanish-American War; and wrote an essay requiring synthesis of knowledge from several sources, including a variety of primary documents. These activities certainly provided students in both control and experimental groups with multiple opportunities to think deeply about the content of history. Second, the questions asked on the content exam were selected mainly to test recall of factual knowledge rather than the ability to reason about history (the DBQ was intended to test for reasoning about history). While some higher

order thinking was required on the history content exam, in general, the questions simply tested recall of factual knowledge.

In summary, since both groups participated in activities that facilitated deep learning about history content and since the history content exam was largely a test of factual knowledge, the researcher had not expected experimental group students to perform better than control group students on this instrument. More importantly, for students in the experimental group, the benefits they received from the emphasis on critical thinking and training in using Richard Paul's model was not offset in any way by a smaller gain in knowledge of history content.

Research question five. As discussed in Chapter II of this dissertation, researchers and theorists continue to debate the question of whether or not differences exist in intellectual development and level of critical thinking abilities between adult learners and traditional-age college students. Question five attempted to address this issue. The researcher anticipated that students at different age levels might benefit from training for critical thinking to differing degrees, or that Paul's model might be more readily accepted by one age group as compared to another. This did not prove to be the case. While a significant interaction was found between age and gender for scores on the Ennis-Weir Critical Thinking Essay Test (lower scores for older males), there were no significant interactions between the model and age levels. Both younger and older students in the experimental group improved from pretest to posttest, while both age levels in the control group decreased their scores from pretest to posttest.

Older students had higher scores than younger students on the DBQ and the CCTDI, but the differences were not statistically significant. Posttest scores on the History Content Exam were almost the same among younger students and older students. Paul's model for critical thinking seems to benefit both younger and older students and appears to be equally effective for both age groups.

   <u>Research question six.</u> As discussed in Chapter II of this dissertation, researchers and theorists continue to debate the question of how gender affects critical thinking and its component constructs such as argument analysis and reflective judgment. Question six attempted to address this issue. The researcher anticipated that females and males might benefit from training for critical thinking to differing degrees, or that Paul's model might seem more intuitive to one gender as compared to another. This did not prove to be the case. Males did perform at a significantly higher level than females on the DBQ, but there were no interactions between the model and gender. Results from the other instruments were mixed when considering gender issues. Mean scores were similar on the Ennis-Weir posttest, but females increased their scores more than males from pretest to posttest (not significant). Both females and males in the experimental group increased their scores on the Ennis-Weir pretest to posttest, and both males and females in the control group lost points, with older males showing the largest decrease pretest to posttest. On the CCTDI, males and females had similar posttest scores, but males increased more than females from pretest to posttest both as a total group and by method of instruction. Males scored higher on the History Content Exam, but females and males increased by almost the same

amount pretest to posttest, again as a total group and by method of instruction. With the exception of the higher scores among males on the DBQ, none of these differences in females and males was found to be statistically significant. The gender difference on the DBQ posttest may be an artifact of differences that existed when they began the study, since males' pretest scores were higher than females on both the Ennis-Weir and on the History Content Exam. Again, there were no interactions between the model and gender, indicating that explicit instruction in Paul's model for critical thinking seems to be equally effective in improving critical thinking abilities for both genders.

Relationships among achievement on the four instruments. Four instruments were used as outcome variables in this study: the Documents Based Question section of the 1986 Advanced Placement U. S. History Exam, the Ennis-Weir Critical Thinking Essay Test, the California Critical Thinking Dispositions Inventory, and a History Content Exam. These four instruments were used to test for four different types of outcomes anticipated as a result of course materials and instructional methods. The DBQ was intended to test for students' ability to analyze and interpret primary source documents (thinking like a historian) and also to test students' knowledge of U.S. history; the Ennis-Weir is discipline neutral and tests for general reasoning abilities; the CCTDI is also discipline neutral and is designed to test for beliefs and attitudes that dispose one toward critical thinking; and the History Content Exam was developed to test for factual knowledge of history course content.

Relationships do, however, exist among the outcomes of the instruments, and correlation analysis was conducted to determine the strength and direction of these relationships. Findings indicate that each instrument was positively related to each of the other three instruments, but the strength of that relationship varied. The strongest relationship (r = .57, or about one-third of the explained variance) was found between the DBQ and the History Content Exam. This moderate relationship might be expected since the DBQ tests for factual knowledge of historical events and people as well as for a student's ability to think historically.

The relationship between the DBQ and the Ennis-Weir was r = .36, p < .009, indicating a significant but small positive relationship. These two instruments measure critical thinking abilities, the Ennis-Weir in a general sense and the DBQ specific to history. The ability to think critically is probably the major factor underlying the relationship between achievement on these two instruments. The Ennis-Weir and the CCTDI also show a small, positive relationship (r = .31, p < .02). Each of these two instruments relates to a major component of critical thinking abilities – the Ennis-Weir tests mainly for reasoning skills and the CCTDI for critical thinking dispositions. Experts find that having dispositions toward critical thinking is as crucial to being considered a good critical thinker as is the possession of requisite cognitive skills. At the same time, the relatively modest strength of the relationship (explaining about 9% of the variance) indicates that if instructors or researchers wish to learn about students' dispositions toward critical thinking, they are unlikely to learn much if they administer a critical thinking skills test alone.

Reasons for the small positive correlations between the History Content

Exam and the Ennis-Weir ($\underline{r}$ = .38, $\underline{p}$ < .006) and the History Content Exam and

the CCTDI ($\underline{r}$ = .35 $\underline{p}$ < .01) seem less clear; these relationships may be based in

the reasoning skills and dispositions toward critical thinking that lead to general

success in college courses. Finally, little relationship was found between the DBQ

and the CCTDI ($\underline{r}$ = .19, $\underline{p}$ < .18). These two instruments seem to be most

different in what they measure.

Each of these instruments, then, does seem to measure different but related

variables.

Summary of Conclusions

The major findings of this study can be summarized as follows:

Community college students' abilities to think historically and to think

critically can improve in a single course when provided with explicit and

intensive training.

Community college students' end of term knowledge of history content

need not suffer when explicit training in critical thinking abilities has been

integrated into course material.

Age and gender do not appear to play significant roles in developing

college students' critical thinking abilities.

Richard Paul's model can be successfully integrated into an introductory

history course with statistically significant benefits to students' abilities to think

critically within a domain and to their general critical thinking abilities.

Limitations

The results of this study pertain to the population described and cannot be generalized to the total population of college students or even to all community college students. The sample size was relatively small ($\underline{n} = 52$) and the study was conducted at a single institution. While the research participants proved to be typical in many ways of students in most Florida community colleges, an alternate diversity mix might create different results from those collected here. Replication with other populations would help strengthen these findings.

The results of this study are also related to the particular method of integrating Richard Paul's model into history courses described in this document. Using a different approach to integrating Paul's model into history courses, or integrating Paul's model into other academic content, might not produce the same results. Further research is clearly needed to explore the generalizability of these findings.

The level of instructor training required to successfully integrate Paul's model into course content may be another limitation of this study. The instructor for this study participated in intensive training in Paul's model (described in Chapter III), and instructors receiving less training might find different results.

A further limitation of this study was the assessment instruments, especially those testing critical thinking. While the instruments selected were carefully chosen from among all available published inventories and seemed most appropriate for the study, there is still much work to be done to refine and to improve existing instruments as well as to develop additional instruments that adequately measure students' gains in critical thinking skills and dispositions.

Implications for Practice

This study was conducted in a naturalistic educational setting with many of the variables typically found in a community college course, including a regular faculty member with a heavy teaching schedule and students who initially enroll and then later drop a course for a variety of reasons. Despite these challenges, findings revealed large effect sizes on instruments testing historical thinking and general critical thinking skills. Finding practical and significant results on two such instruments, indicating that teaching Paul's model can improve both students' abilities to think within a discipline and general abilities to think critically, provides a powerful incentive to look more closely at possible consequences of integrating this model more widely into educational curricula. Indeed, the findings of this study concerning the effectiveness of Richard Paul's model for critical thinking in improving students' abilities to think critically hold important implications for several groups of people, including educators, business leaders, and society.

From the viewpoints of educators, future employers, and society in general, training students to think critically is among the principal tasks of the educational system. Critical thinking abilities such as analyzing complex issues and situations and generating solutions, making connections and transferring insights to new contexts, and developing standards for decision making, are necessary to success in business and in society. Businesses demand high level thinking abilities from an increasing percentage of their employees, and a democratic society can not afford for only the elite to be trained for critical

thinking. If business leaders truly want their employees to have high level thinking abilities and if society really needs its citizens to be able to think critically, they must influence faculty and institutions to integrate explicit instruction in critical thinking into all levels of schooling in all academic areas. To educators falls the responsibility of providing this training.

For educators, understanding both the nature of learning to think critically and methods of instruction through which this can be done are essential. There is little evidence that most students will improve in their abilities to think critically simply by attending classes – even if the teacher or instructor is a good critical thinker and uses critical thinking in planning his or her lessons. There is, on the other hand, much evidence, including this study, to show that if we want students to think critically, we must explicitly teach them to how to do so. In the present study, training in critical thinking was both direct and intense. Similarly, to improve as critical thinkers, students must be taught components of the model explicitly and thoroughly, and they should be provided with frequent practice in using the model. Paul's model needs to be deeply integrated into course content, not just introduced or used a few times during a semester. Implicit modeling of critical thinking combined with a few scattered lessons providing critical thinking practice are not likely to be effective for most students. The most essential implication of this study may be the importance of recognizing the need for explicit and intense training for critical thinking.

Another implication of this study is that instructors should avoid making assumptions about which students are most likely to benefit from instruction in

critical thinking. The results of this study demonstrate that the effectiveness of explicitly training students to use Paul's model for critical thinking did not vary according to age or gender. One of the prevailing ideas in higher education is that older students are more experienced and better motivated than younger students, and thus more likely to perform at a higher level on tasks requiring critical thinking. This study does not support the idea that older students are better critical thinkers. Although older students' mean scores were higher on the DBQ and on the CCTDI than younger students' scores, they declined slightly from pretest to posttest on the Ennis-Weir while younger students increased (none of these were statistically significant differences). Overall, their pattern of achievement varied in relationship to younger students on both posttest scores and on pretest to posttest differences. While older students may display more teacher-pleasing behaviors, such as being better prepared for class, they did not perform significantly better than younger students on the instruments used in this study. Younger students appear to be as ready to benefit from explicit instruction in critical thinking as older students.

Additionally, the effectiveness of Paul's model did not appear to differ between females and males. Males did score higher than females at a statistically significant level on the DBQ, but this finding may be a result of initial gender differences (males had higher pretest scores on the Ennis-Weir and on the History Content Exam) or of the smaller sample size for males. Nothing in the interviews or other aspects of the study accounts for this difference, and there was no interaction between the model and gender that would suggest employing a

different approach to teaching critical thinking for males and females. Both females and males need to be similarly encouraged to develop their abilities to think critically. Instructors should avoid untested assumptions about which students are most ready to improve their abilities to think critically.

Educators might also reasonably consider whether the challenge involved in learning to think critically could have a negative impact on students' attitudes or motivation to learn, but this study indicates that this concern is not necessarily valid. Data from this study show that in general, students' attitudes toward learning to think critically using Richard Paul's model do not appear to differ from students' attitudes toward a more traditional approach to learning and thinking in history. First, results from the "Student Perception of Instruction" forms indicate that overall attitudes toward the course, materials, and method of instruction did not vary between the control and experimental groups. At the same time, responses from some individual questions on the form did show modest variation between the control group and the experimental group, results that provide insight into at least one reason why some students may find Paul's model initially challenging. The largest difference between means in the experimental and control group on an individual response item was .22 points on the statement "the professor analyzes and answers questions efficiently" (Experimental $\underline{M} = 3.65$, Control $\underline{M} = 3.87$). These results may represent students' traditional expectations that instructors should provide authoritative answers to questions rather than guiding students to analyze and respond to questions for themselves, certainly a less comfortable experience for students. Additionally, interviews

show that some students may find Paul's model challenging to learn and to

master, and thus they may need extra support at first. Nevertheless, the interviews

also show that students who felt initial confusion and/or reported having initial

difficulties ultimately became more confident as they became more familiar with

using Paul's model. It appears that teaching for critical thinking using Paul's

model need not lead to attitudinal or motivational problems among students, as

long as appropriate support is provided for students who initially experience

frustration in using the model.

The results of this study also suggest that adequate training and support is

required for instructors to successfully infuse Paul's model into course content.

Paul's model is theoretically rich and structurally complex, much like critical

thinking itself. This is not a "quick-fix" instructional model that can be

superficially applied in a few course activities, nor is it a simple list of elements,

standards, and traits to be memorized. Rather, it is an approach to instruction that

requires, for most of its practitioners, a readiness to reflect deeply on a course and

to rebuild it from its curricular and pedagogic foundations up. Redesigning

courses to promote continual thoughtfulness about course content is probably

essential for this model to provide the kind of benefits found in this study. This

kind of course restructuring requires both in-depth training in the model and

continued support as an instructor deals with unfamiliar problems and issues.

The Center for Critical Thinking provides training in the model at a

yearly conference and at seminars held in various locations several times a year.

Additionally, Richard Paul and two colleagues regularly conduct professional

development workshops for schools throughout the country. Other educators, including this researcher, have completed a week-long Academy providing training as a trainer for other faculty in the basic principles and practical applications of the model. In the viewpoint of this instructor, who has completed the equivalent of eight days of formal training in various aspects of Paul's model, the minimum effective program is the two-day foundational workshop providing approximately 12 hours of training. Instructors in this workshop present the theory underlying the model, explain and model basic concepts and principles, and provide opportunities for practice and feedback. More specialized seminars, for example those on Socratic questioning or the process of assessment, are probably most effective after an instructor has experienced using the model for a period of time. Handbooks provided to participants outline much of what is included in the workshop and also provide ideas and materials for incorporating the model into the structure of the curriculum. Additional support materials (written material and videos) are available from the Center for all age levels. Once the basic aspects of Paul's model are understood, it is not difficult to apply them to the content and structure of a course. On the other hand, one likely result of training in this model (and becoming a better critical thinker) is repeated reflection on basic course concepts, resulting in time-consuming revisions of course materials and methods. While it might be possible to learn to use the model from videos and handbooks alone, professional development workshops seem more effective because they provide for interaction with peers and feedback from experienced workshop leaders. Whatever the chosen format, successful

integration of Paul's model into course content requires an effective training program and ongoing support.

Training faculty to integrate critical thinking into course content should not wait until teachers are already in the classroom and possibly entrenched in didactic methods of teaching. Teacher training programs should incorporate teaching for critical thinking into their curricula beginning with a student's first education course. Future teachers need to know how to think critically about the educational issues that face our country and about the problems they will face as teachers, and they need to be taught how to teach their students to think critically. Whether through separate courses devoted to critical thinking or through integrating training for critical thinking into various required teacher education courses, it is essential to infuse critical thinking requirements into teacher training as early and as intensely as possible.

Historians also need to rethink their methods of instruction. While a cursory review of <u>Perspectives</u>, for example, shows a tremendous increase in column space devoted to (and, by inference, interest in) teaching history since the 1970s, many faculty continue to rely on lecture alone, apparently content in the faulty assumption that if they have thought critically as they prepared the lecture, students will learn to think critically by listening to it. Many history instructors do attempt to recreate the activities of historians in the classroom, thus teaching students to think historically (or to think like an historian), but graduate schools of history need to direct more attention to rethinking traditional approaches to teaching history to undergraduates. Future history professors should be taught

how to provide their students with explicit instruction and practice in thinking historically and in general critical thinking skills.

One further implication of this study is the need to teach for critical thinking across the curriculum, not just in isolated courses. Paul's model is currently used at a variety of grade levels in various content areas throughout the country. Integrating the model at all educational levels and across the curriculum should eliminate the problem of student unfamiliarity or frustration with the model after initial instruction. From that point on, students would be able to build on the model, adding more elements or aspects and going more deeply into the elements and standards previously introduced. Whether or not Paul's model is best for all grade levels and situations is a question that can only be resolved by further research. But the need for taking critical thinking seriously is not questionable. Assisting students in maximizing their opportunities to learn in all situations and to make their academic lessons relevant to their everyday activities is essential for meeting many of the main goals of our educational system: an educated citizenry, a competent workforce, academic excellence, and lifelong learning.

Recommendations for Further Research

Students in this study who were taught to use Paul's model for critical thinking to analyze primary source documents improved their abilities to think historically and their general critical thinking skills. Whether these results will continue over time and be transferred to other settings is open to question. One possible area for research is to do a follow-up study on students who participated

in this study to see if students taught to analyze historical documents using Paul's model retain the critical thinking abilities they gained and if they are more likely to apply them in everyday situations when compared to students in the control group.

Since this is the first empirical study conducted using Paul's model for critical thinking, replication is clearly needed. Teachers and administrators from every grade level, including elementary, middle-school, high school, community college, and university, participate in training in this model and regularly attempt to integrate it into their schools. Although the findings of this study indicate significant benefits from integrating Paul's model into the curriculum, carefully conducted empirical studies should be done at different grade levels and in a variety of subject matter. While no differences were found in the effectiveness of Paul's model by age or gender, other demographic characteristics such as ethnicity or socio-economic status might also be considered as variables.

The relative effectiveness and impact of this specific instructional model also needs to be tested against other models. It is possible that explicit, intense teaching of Richard Paul's model had as much effect as the particular attributes of the model itself. Research needs to be done to see if other models for critical thinking, which might have more potential for use at other grade levels or in other academic areas, might be equally effective.

Paul's model might also be tested using other assessment instruments. Instead of using the Ennis-Weir Critical Thinking Essay Test to test for changes in students' ability to reason on everyday subjects, the California Critical

Thinking Skills Test (Facione, 1992), a multiple choice critical thinking

instrument, might be used. It would also be important to test for changes in other

subject areas using instruments appropriate for that content.

On a theoretical level, scholars need to continue their efforts at consensus

in this field, with the goal of a broad, unified concept of critical thinking. The

relationship between critical thinking in everyday reasoning and critical thinking

in various fields of expertise also needs further research. Better instruments for

testing for critical thinking have already been mentioned as a vital area of

continued research.

Recommendations for Professional Development.

While most educational institutions recognize the importance of critical

thinking, Chapter I of this document has shown that effective instruction for

critical thinking is not occurring on a broad scale. Teaching for critical thinking is

not easy, and there are no quick fixes or easy approaches that can adequately deal

with the complexity of this concept. Effective models such as Paul's are complex

and require time and effort to learn and to implement. Colleges of Education need

to provide their students with training in critical thinking and instruction in

teaching for critical thinking. If educational institutions wish to do more than pay

lip-service to the importance of critical thinking, they should consider providing

their faculty with professional development workshops of at least 12 instructional

hours using Paul's model or another proven approach to teaching for critical

thinking.

Beyond initial training to teach for critical thinking, instructors need ongoing support as they learn to think more critically about the content of their courses and the methods they use to teach them. Changing course materials and methods so that students are challenged to think critically requires much time and effort, and teachers and instructors will need compensated time, as well as administrative and peer support, to implement this model on a broad scale. The challenges are great, but the results will be worthwhile and rewarding for instructors, students, and society.

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APPENDICES

Appendix A

Critical Thinking and History Packet

Appendix A. (Continued).

Critical Thinking and History

This history course emphasizes thinking critically about history in all course work, including assignments, class discussions, exams, and essays. We are using as our general model the elements and intellectual standards of critical thinking developed by Richard Paul and the Center for Critical Thinking and Moral Critique. As you learn the elements and standards of reasoning, it is appropriate to use them in every aspect of this course as well as in other academic and everyday situations requiring good reasoning. If you put serious effort into learning and practicing these aspects of critical thinking, you will improve in your abilities and dispositions (attitudes) toward thinking critically about primary source readings, textbooks, essays, and exams, and you will become a better critical thinker in every aspect of life.

This packet contains:

p. 1 -- definitions of critical thinking
p. 2 -- a chart showing the elements of reasoning and universal intellectual standards
p. 3 -- definitions of the elements of reasoning
p. 4 -- "Helping Students Assess Their Thinking," points to guide your reasoning and to evaluate the thinking
      of others
p. 5 -- explanation of universal intellectual standards through questions you can ask yourself about your own
      thinking or that of others
p. 6 -- a chart showing the relationship between elements, standards, traits, and critical thinking abilities
p. 7 -- a description of the intellectual traits or dispositions important for a critical thinker
p. 8 -- a list of "discipline specific" critical thinking skills, or strategies that historians use when they "think
      historically"
p. 9 – some common reasoning fallacies

HOW TO USE THIS PACKET:
Refer to the chart on elements and standards (p. 2) often as you assess the reasoning of others (e.g. source readings) or your own reasoning (e.g. assignments and essays). Use the explanations of elements (p. 3, 4) and standards (p. 5) as often as needed to make sure you understand the various aspects of reasoning. As the elements and standards become more familiar to you, begin to examine how your attitudes compare to ideal intellectual traits (p. 7) and check to see if you are developing the abilities you need to be a good critical thinker. Be sure to use historians' strategies (p. 8) to analyze every primary document you read. The handout on fallacies (pp. 9, 10) explains some common reasoning errors to look out for in arguments made by others and to avoid in your own reasoning.
Use your developing critical thinking abilities as often as possible in history class, in other course work at Polk Community College, and in everyday decision making and evaluations of relationships.

Appendix A. (Continued).

Selected Definition of Critical Thinking

You might think of Critical Thinking as:

Thinking about your thinking while you're thinking in order to improve your thinking. (Richard Paul)

More formally, **CRITICAL THINKING IS:**

- **reasonable, reflective thinking that is focused on deciding what to believe or do.** (Robert Ennis, Retired Professor of Philosopher of Education at the University of Illinois and co-author of the Cornell Critical Thinking Test)

- **the ability and disposition to improve one's thinking by systematically subjecting it to intellectual self-assessment.** (Richard Paul, Director of the Center for Critical Thinking and Moral Critique at Sonoma State University, CA., and author of *Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World.* 1993)

- **a rational response to questions that cannot be answered definitively and for which all the relevant information may not be available. It is defined here as an investigation whose purpose is to explore a situation, phenomenon, question, or information and that can therefore be convincingly justified.** (Joanne Kurfiss, Developmental Psychologist and teaching consultant at the University of Delaware, in *Critical Thinking: Theory, Research, Practice, and Possibilities.* 1988)

- **thinking that is purposeful, reasoned, and goal directed. It is the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions.)** Diane Halpern, Psychologist at California State University, in *Thought and Knowledge: An Introduction to Critical Thinking.* 1996)

- **purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based.** (The Delphi Report. *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction.* 1990)

Appendix A. (Continued).

A CRITICAL THINKER

Considers the Elements of Reasoning

Points of View
Frame of Reference
Perspective
Orientation

Purpose of the Thinking
Goal, objective

Implications & Consequences

Questions at Issue
Problem

Elements

of

Reasoning

Assumptions
Presuppositions, taking for granted

Information
Data, observations, facts, experiences

Concepts
Theories, laws, models, defini-tions, principles

Interpretation & Inference
Conclusions, solutions

With Sensitivity to Universal Intellectual Standards

Clear ⟶ **Accurate** ⟶ **Relevant** ⟶ **Deep** ⟶ **Broad**

1996 Foundation For Critical Thinking , Sonoma California

Appendix A. (Continued).

Definitions: Elements of Reasoning

Point of View (Perspective): Human thought is relational and selective. It is impossible to understand any person, event, or phenomenon from every vantage point simultaneously. Critical thinking requires that this fact be taken into account when analyzing and assessing thinking. This is not to say that human thought is incapable of truth and objectivity, but only that human truth, objectivity, and insight is virtually always limited and partial, virtually never total and absolute. The hard sciences are themselves a good example of this point, since qualitative realities are systematically ignored in favor of quantifiable realities.

Purpose: The intention, aim, or end in view of a document, discussion, activity, relationship, etc.

Question or Problem: A matter, situation, or person that is perplexing or difficult to figure out, handle, or resolve. Problems and questions can be divided into many types, including *monological* (problems that can be solved by reasoning exclusively within one discipline, point of view, or frame of reference) and *multilogical* (problems that can be analyzed and approached from more than one, often from conflicting points of view or frames of reference).

Evidence: The data (facts, figures, or information) on which a judgment or conclusion might be based or by which proof or probability might be established. Critical thinkers distinguish the evidence or raw data upon which they base their interpretations or conclusions from the inferences and assumptions that connect data to conclusions. Uncritical thinkers treat their conclusions as something given to them in experience, as something they directly observe in the world. As a result, they find it difficult to see why anyone might disagree with their conclusions.

Assumption: A statement accepted or supposed as true without proof or demonstration; an unstated premise or belief. *All human thought and experience is based on assumptions.* Our thought must begin with something we take to be true in a particular context. We are typically unaware of what we assume and therefore rarely question our assumptions. Much of what is wrong with human thought can be found in the uncritical or unexamined assumptions that underlie it. For example, we often experience the world in such a way as to assume that we are observing things just as they are, as though we were seeing the world without the filter of a point o view. People we disagree with, of course, we recognize as *having a point of view*. One of the key dispositions of critical thinking is the on-going sense that as humans we always think within a perspective, that we virtually never experience things totally and absolutistically. There is a connection, therefore, between thinking as to be *aware of our assumptions* and being *intellectually humble.*

Concept: An idea or thought, especially a generalized idea of a thing or of a class of things. Humans think within concepts or ideas. *We can never achieve command over our thoughts unless we learn how to achieve command over our concepts or ideas.* Thus we must learn how to identify the concepts or ideas we are using, contrast them with alternative concepts or ideas, and clarify what we include and exclude by means of them. For example, most people say they believe strongly in democracy, but few can clarify with examples what that word does and does not imply.

Inference: An inference is a step of the mind, an intellectual act by which one concludes that something is so in light of something else's being so, or seeming to be so. If you come at me with a knife in your hand, I would probably infer that you mean to do me harm. Inferences can be strong or weak, justified or unjustified. Inferences are based on assumptions

Implication: A claim or truth which follows from other claims or truths. One of the most important skills of critical thinking is the ability to distinguish between what is actually implied by a statement or situation from what may be carelessly inferred by people. Critical thinkers try to *monitor their inferences to keep them in line with what is actually implied* by what they know. When speaking, critical thinkers *try to use words that imply only what they can legitimately justify*. They recognize that there are established word usages which generate established implications. To say of an act that it is murder, for example, is to imply that it is intentional and unjustified.

Paul, Richard. (1995). *Critical Thinking: How to Prepare Students for a Rapidly Changing World.*
Santa Rosa, CA:Foundation for Critical Thinking.

Appendix A. (Continued).

Helping Students Assess Their Thinking

1) All reasoning has a PURPOSE.
< Take time to state your purpose clearly.
< Distinguish your purpose from related purposes.
< Check periodically to be sure you are still on target.
< Choose significant and realistic purposes.

2) All reasoning is an attempt to FIGURE something out, to settle some QUESTION, solve some PROBLEM.
< Take time to state the question at issue clearly and precisely.
< Express the question in several ways to clarify its meaning and scope.
< Break the question into sub-questions.
< Identify if the question has one right answer, is a matter of mere opinion, or requires reasoning from more than one point of view.

3) All reasoning is based on ASSUMPTIONS.
< Clearly identify your assumptions and determine whether they are justifiable.
< Consider how your assumptions are shaping your point of view.

4) All reasoning is done from some POINT OF VIEW.
< Identify your point of view.
< Seek other points of view and identify their strengths as well as weaknesses.
< Strive to be fairminded in evaluating all points of view.

5) All reasoning is based on DATA, INFORMATION, & EVIDENCE.
< Restrict your claims to those supported by the data you have.
< Search for information that opposes your position as well as information that supports it.
< Make sure that all information used is clear, accurate, and relevant to the question at issue.
< Make sure you have gathered sufficient information.

6) All reasoning is expressed through, and shaped by, CONCEPTS and IDEAS.
< Identify key concepts and explain them clearly.
< Consider alternative concepts or alternative definitions to concepts.
< Make sure you are using concepts with care and precision.

7) All reasoning contains INFERENCES or INTERPRETATIONS by which we draw CONCLUSIONS and give meaning to data.
< Infer only what the evidence implies.
< Check inferences for their consistency with each other.
< Identify assumptions which lead you to your inferences.

8) All reasoning leads somewhere or has IMPLICATIONS and CONSEQUENCES.
< Trace the implications and consequences that follow from your reasoning.
< Search for negative as well as positive implications.
< Consider all possible consequences.

1996 Foundation For Critical Thinking: 800-833-3645 URL:http//www.sonoma.edu/cthink

Appendix A. (Continued).

Universal Intellectual Standards
And questions that can be used to apply them

Universal intellectual standards are standards which must be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue, or situation. To think critically entails having command of these standards. To help students learn them, teachers should pose questions which probe student thinking, questions which hold students accountable for their thinking, questions which, through consistent use by the teacher in the classroom, become internalized by students as questions they need to ask themselves. The ultimate goal, then is for these questions to become infused in the thinking of students, forming part of their inner voice, which then guides them to better and better reasoning. While there are a number of universal standards, the following are the most significant:

Clarity: Could you elaborate further on that point? Could you express that point in another way? Could you give me an illustration? Could you give me an example? Clarity is a gateway standard. If a statement is unclear, we cannot determine whether it is accurate or relevant. In fact, we cannot tell anything about it because we don't yet know what it is saying. For example, the question "What can be done about the education system in America?" is unclear. In order to adequately address the question, we would need to have a clearer understanding of what the person asking the question is considering the "problem" to be. A clearer question might be "What can educators do to ensure that students learn the skills and abilities which help them function successfully on the job and in their daily decision-making?"

Accuracy: Is that really true? How could we check that? How could we find out if that is true? A statement can be clear but not accurate, as in "Most dogs are over 300 pounds in weight."

Precision: Could you give me more details? Could you be more specific? A statement can be both clear and accurate, but not precise, as in "Jack is overweight." (We don't know how overweight Jack is, one pound or 500 pounds).

Relevance: How is that connected to the question? How does that bear on the issue? A statement can be clear, accurate, and precise, but not relevant to the question at issue. For example, students often think that the amount of effort they put into a course should be used in raising their course grade. Often, however, "effort" does not measure the quality of student learning, and *when that i*s so, effort is irrelevant to their appropriate grade.

Depth: How does your answer address the complexities in the question? How are you taking into account the problems in the question? Is that dealing with the most significant factors? A statement can be clear, accurate, precise, and relevant, but superficial (that is, lack depth). For example the statement "Just say No" which is often used to discourage children and teen from using drugs, is clear, accurate, precise, and relevant. Nevertheless, it lacks depth because it treats an extremely complex issue, the pervasive problem of drug use among young people, superficially. It fails to deal with the complexities of the issue.

Breadth: Do we need to consider another point of view? Is there another way to look at this question? What would this look like from a conservative standpoint? What would this look like from the point of view of . . . ? A line of reasoning may be clear, accurate, precise, relevant, and deep, but lack breadth (as in an argument from either the conservative or liberal standpoints which gets deeply into an issue, but only recognizes the insights of one side of the question.)

Logic: Does this really make sense? Does that follow from what you said? How does that follow? But before you implied this and now you are saying that, I don't see how both can be true. When we think, we bring a variety of thoughts together into some order. When the combination is not mutually supporting, is contradictory in some sense, or does not "make sense," the combination is "not logical."

Appendix A. (Continued).

ELEMENTS

Purpose	Assumptions
Question at issue or Problem to be Solved	Inferences & Interpretations
Concepts	Points of View
Information	Implications & Consequences

TRAITS

Independent Thinking

Intellectual Empathy

Intellectual Humility

Intellectual Courage

Intellectual Integrity

Intellectual Perseverance

Faith in Reason

Intellectual Curiosity

Intellectual Civility

Intellectual Responsibility

REASONING

STANDARDS

Clear	Broad
Specific	Deep
Relevant	Accurate
Logical	Precise
Significant	Fair
Consistent	Complete

ABILITIES

Process	**Object**	**Standard**
Identifying	purposes	clearly
Analyzing	problems	accurately
Synthesizing	interpretations	precisely
Evaluating	concepts	deeply
Reviewing	assumptions	thoughtfully
Considering	points of view	fairly

Appendix A. (Continued).

Valuable Intellectual Traits

Intellectual Humility: Having a consciousness of the limits of one's knowledge, including a sensitivity to circumstance in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice, and limitations of one's viewpoint. Intellectual humility depends on recognizing that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness, or conceit, combined with insight into the logical foundations, or lack of such foundations, of one's beliefs.

Intellectual Courage: Having a consciousness of the need to face and fairly address ideas, beliefs, or viewpoints toward which we have strong negative emotions and to which we have not given a serious hearing. This courage is connected with the recognition that ideas considered dangerous or absurd are sometimes rationally justified (in whole or in part) and that conclusions and beliefs inculcated in us are sometimes false or misleading. To determine for ourselves which is which, we must not passively and uncritically "accept" what we have "learned." Intellectual courage comes into play here, because inevitably we will come to see some truth in some ideas considered dangerous and absurd, and distortion or falsity in some ideas strongly held in our social group. We need courage to be true to our own thinking in such circumstances. The penalties for non-conformity can be severe.

Intellectual Empathy: Having a consciousness of the need to imaginatively put oneself in the place of others in order to genuinely understand them, which requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief. This trait correlates with the ability to reconstruct accurately the viewpoints and reasoning of others and to reason from premises, assumptions, and ideas other than our own. This trait also correlates with the willingness to remember occasions when we were wrong in the past despite an intense conviction that were right, and with the ability to imagine our being similarly deceived in a case–at-hand.

Intellectual Integrity: Recognition of the need to be true to one's own thinking; to be consistent in the intellectual standards one applies; to hold one's self to the same rigorous standards of evidence and proof to which one holds one's antagonists; to practice what one advocates for others; and to honestly admit discrepancies and inconsistencies in one's own thought and action.

Intellectual Perseverance: Having a consciousness of the need to use intellectual insights and truths in spite of difficulties, obstacles, and frustrations; firm adherence to rational principles despite the irrational opposition of others; a sense of the need to struggle with confusion and unsettled questions over an extended period of time to achieve deeper understanding or insight.

Faith in Reason: Confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, by encouraging people to come to their own conclusions by developing their own rational faculties; faith that, with proper encouragement and cultivation, people can learn to think for themselves, to form rational viewpoints, draw reasonable conclusions, think coherently and logically, persuade each other by reason and become reasonable persons, despite the deep-seated obstacles in the native character of the human mind and in society as we know it.

Fairmindedness: Having a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or vested interests, or the feelings or vested interests of one's friends, community or nation; implies adherence to intellectual standards without reference to one's own advantage or the advantage of one's group.

Appendix A. (Continued).

Developing as a Historical Thinker: How Historians Make Sense of Historical Documents

Based on empirical research by Samuel Wineburg ([1991], "Historical problem solving: A study of the cognitive processes used in the evaluation of documentary and pictorial evidence." Journal of Educational Psychology, 83 [1], 73-87) we recognize that historians regularly use the three following heuristics (strategies) when reading and trying to interpret primary documents. To illustrate these strategies, I've used examples from documents describing the Battle of Lexington on April 19, 1775. You should become familiar with them and get into the habit of using them to think historically.

1. **SOURCING**. Historians check the **source** or attribution of a document before reading it in order to be aware of possible biases, points of view, or limitations on accuracy, including the date and place of its creation. Sourcing helps readers weigh textual information and determine its reliability, and it alerts readers to the genre of the text as well (personal letter or diary entry of a soldier? newspaper report? sworn depositions providing an official account of a battle? a patriotic novel?). View a text (document) as a person with whom you are engaged in a social exchange, not as bits of information to be gathered. You must consider what is said as inseparable from who says it.

Some elements to consider when deciding the **credibility** of a source include: level of expertise (a colonel vs. a shopkeeper); conflict of interest (American vs. British account); agreement with other sources (see #3 below); reputation (Colonial leader vs. town drunk); use of established procedure (interviewing a variety of eyewitnesses for a newspaper account); risk to reputation (private diary entry vs. sworn deposition); ability to give reasons (support for your position); and careful habits (how careful an observer/reporter has this person proved to be in the past?)

2. **CONTEXTUALIZATION**: **Contextualization** refers to concerns with when and where events took place, including the chronological sequence of an event, distance in time between the event and recording of the event, climate and weather conditions, geographical conditions, etc. Historians often attempt to reconstruct an event as it occurred. Proper attention to context would lead you to question, for example, the descriptive phrase "bayonets glittering in the sunshine" if you knew that the skirmish being described was getting underway at 5 o'clock in the morning. It would encourage you to weight an account written a day after an event differently from one written 7 years later.

Further, **contextualization** means that you consider the political, economic, social, and cultural circumstances or background in which the event took place. This step is essential for interpreting a document fairly and accurately.

3. **CORROBORATION:** Historians try to find all relevant information on a topic and compare it before trying to figure out what "really" happened. **Corroboration** is the act of comparing documents with one another and checking important details before accepting them as plausible or likely. If one account says the Minute Men "stood their ground" (a high-school text book) while others report that the colonists "went off in great confusion" (*London Gazette*, supported by official colonial references to colonists escaping from the battle scene), this discrepancy must be addressed, not dismissed. Every account, including textbooks, reflects a particular point of view, so it is important to reflect on how a source's bias might influence the quality of its report. If accounts of the same event conflict, the historian (and you) should consider the credibility of each author (see # 1); the purpose of each account (for example, was the document meant as a fair and accurate account of the event, or is the account from a novel loosely based on the event designed to entertain?); and how far removed in place and time each author is (an eyewitness will probably prove more accurate than a person who lives 100 miles away and relies on a diary entry by her grandfather). Also, the first account you read (or the longest, most entertaining, one you already agree with, etc.) should not control your understanding of the event.

Historians use these strategies to puzzle about discrepancies, compare written documents and material remains, corroborate and discorroborate key features, and to represent what can and what cannot be known. Historical research is often an exercise in exploring the limits of historical knowledge. The goal is an accurate, deep, complex, well-reasoned judgment about what "really" happened based on inferences from available evidence, a representation of the past that fairly considers diverse, often conflicting viewpoints.

Appendix A. (Continued).

Some Common Reasoning Fallacies (flaws and errors in arguments)

Changing the subject: Often, in discussion, one person argues for something other than the question at hand. One way people sometimes do this is to try to discredit a position on the basis of an attack on the person offering the position (on their intelligence, integrity, or family background, for example). This is called a *personal attack argument (argumentum ad hominem).* Another way people change the subject is to argue for a position that is supportable, but not completely relevant to the question at issue. For example, a person who supports using tax revenue for a new police station might say that people who oppose the police station don't care about rising crime rates (*personal attack argument*), or he might give reasons for needing more police officers to draw attention away from the fact that he can't provide sufficient reasons for building a new station. In both situations, the person changing the subject is avoiding the real issue.

Circular argument: This argument does not make any progress because it starts by explicitly assuming what it tries ultimately to prove or conclude (it goes in a circle). No reasons or evidence is provided to support the argument. *Begging the question* is similar. The speaker assumes everyone else shares the same basic assumptions and beliefs when they don't. Be wary when someone says, "everyone knows," "we all agree," or "it's obvious that." Quite often these phrases assume what they need to prove. Ex. "Everyone knows we need a new police station. We need to raise funds and begin as quickly as possible."

Equivocation or Ambiguous Language: Sometimes an argument can look good, but not be so because it depends on shifting the meaning of a key term during the course of the argument. To equivocate is to shift word meanings in mid-argument, and to exploit the shift in reaching a conclusion. Ambiguous language allows the author to define a concept in a way that suits the purposes of the author but would not be accepted by most reasonable people. Does the author clarify (define) important concepts such as "liberty" or "bias" or "reasonable doubt"? Is the definition provided a correct, reasonable, or commonly accepted one? Does he or she use the term consistently throughout the argument?

False or dubious assumption: A position is no stronger than its assumptions. An example is the *straw person* argument. In this fallacy, false assumptions are made about a position you oppose then the misdescribed position is presented and refuted. For example, timber interests might claim that environmentalists want to stop all economic use of natural resources, then refute that position in editorials and advertisements. If that is not actually the position of environmentalists, the timber interests are using a *straw person* argument.

Insufficient reason or evidence: There many ways that the reasons and evidence offered can be insufficient.
  Other plausible explanations or possibilities: sometimes a hypothesis does explain the evidence, but other alternate hypotheses or possibilities might explain the evidence equally well. Always look for rival causes or other interpretations for the evidence. In analyzing educational issues, there is rarely one, simple cause of a problem. Multiple causation and complex explanations are more likely.
  Overgeneralization or hasty generalization: Often, people draw general conclusions that apply to things or populations about which the evidence is not representative or is insufficient. Statements such as "public schools are failing" (all if them? in everything?) or that "elected officials are dishonest" are overgeneralizations. Be wary of absolute terms such as "All," "None," "Never," and "Always."
  Oversimplification: One standard kind of oversimplification is the assumption that there are only two alternatives (right/wrong, good/bad) when in fact there are others (sometimes called the *either-or* fallacy). Ex.: "Are we going to build a new police station in this town or are we going to abandon it to thugs, gangs, and dope dealers?" Another kind of oversimplification is to latch on to an easy answer to a complex problem instead of thinking about it deeply and broadly.
  Emotional language without sufficient substance: People often appeal to slogans or use words (including *glittering generalities* [laudatory term offered without backing or support] or *name-calling*[use of a derogatory term without backing or support]) that set off emotional reactions in many of us but do not offer substantial reasons. Calling someone a communist or a racist because he doesn't support a given position is name-calling. Calling him patriotic because he does support your position may be a glittering generality.

Appendix A. (Continued).

Faulty analogies: An analogical argument proceeds by showing that two things are alike in some respects, and then concludes that they are therefore alike in some other respect. An analogy can help readers understand abstract or difficult ideas. Some analogical arguments are strong: some are faulty. Their potential weakness lies in the respects in which the two things are different, and there are always differences. You need to consider whether the similarities are strong enough to warrant the conclusions. For example, one might argue that all the nations of the world could successfully join together because they are like the thirteen states that joined together to form the United States. A challenge could note that the cases are different because the United States had external enemies against which the states needed to protect themselves, whereas the world has no such external enemies.

Neglect of a point of view: Often, a conclusion depends on the point of view of the arguer. It sometimes helps to show that from another point of view, the evidence is insufficient. Neglecting a point of view may be done deliberately, for example if an arguer presents only the negative (or only the positive) elements of an institution or system – providing a warped or misleading picture.

Failure to follow: Sometimes, the alleged connection between reasons or evidence and conclusions is just not there. The conclusion fails to follow from its support, or the support offered is irrelevant to the conclusion. Ex.: "He owns his own business. He must be rich and doesn't care what happens to us poor, struggling workers." These conclusions do not necessarily follow from the fact that he owns a business.

False cause arguments assume that because one event follows another, the first event caused the other. Advertisers often use this kind of false reasoning, for example implying that buying the right car will improve your social life. Accepting a false cause is also frequently used to avoid thinking deeply about complex issues. Someone accepts a cause that "makes sense" or fits their preconceived ideas, thus avoiding the effort of examining other points of view or other possible causes.

Statistics: Statistics provide data or information about groups of things or people, but they must be interpreted. Check statistics carefully to see if they really support the assertions being made. Ask yourself if the statistics are based on sufficient sampling (enough people, time, objects, etc. to allow generalizing) and careful controls (other possible causes ruled out). Check to see that the statistics provided don't leave out other relevant information. The way questions are posed in polls can also affect the outcome.

Weak source: All information, arguments, etc. have sources. Often the credibility (the degree to which a source deserves to be believed) of a source is suspect. To determine if a source is credible, consider the following qualifications: (1) degree of expertise in the subject, (2) possible conflict of interest, (3) agreement with other sources, (4) risk to reputation, (5) use of established procedures, (6) ability to provide reasons, and (8) careful habits. *Appeal to authority* is a move in an argument that in effect says that because the authority says that something is so, it is so. Often, appealing to an expert or authority is a **good** way to support a position (such as citing sources in a research paper or relying on expert witnesses in a court of law). In general, it is considered reasonable to accept an expert's judgment on an issue, because she **is** an expert, and because support for her judgment is available to check. Note that using a product (*personal testimonial*- an attempt to support a position on the basis of testimony in its favor), or participating in or witnessing an event does not make one a credible source – consider the contradictory "facts" and descriptions typically provided by witnesses of a crime.

Adapted from Ennis, Robert H. (1996). *Critical thinking*. Upper Saddle River, NJ: Prentice Hall.

Appendix B

Student Perception of Instruction Form and Student Responses

Appendix B. (Continued).

Appendix B. (Continued).

In order to compare student responses on the "Student Perception of Instruction"

form, points were assigned for each response. A response in the "Almost Always"

column was assigned four points, "Frequently" was assigned three points, "Sometimes"

was assigned two points, and "Seldom" was assigned one point. For each statement, by

group, points were added and then divided by the total number of student responses in

that group. This method provided an average rating (maximum 4.0) for each statement.

The ratings for each statement, again by group, were added and divided by the total

number of statements, 15. This provided an overall rating for the instructor by group. It is

this overall mean rating that appears in Chapter III of this study. Table B1 shows

students' ratings for the instructor on each statement and the overall rating. Overall rating

for the instructor was 3.81 in the experimental group and 3.84 in the control group,

providing evidence of consistency of instruction.

Appendix B. (Continued).

Table B1.

<u>Students' Rating of Instructor: "Student Perception of Instruction Form"</u>

Statement	Experimental	Control
1.	3.92	3.96
2.	3.58	3.70
3.	3.85	3.87
4.	3.96	3.96
5.	3.65	3.87
6.	3.92	3.78
7.	3.77	3.70
8.	3.88	3.95
9.	3.88	4.00
10.	3.96	4.00
11.	3.77	3.74
12.	3.88	3.91
13.	3.62	3.57
14.	3.62	3.65
15.	3.88	4.00
Overall	3.81	3.84

Appendix B. (Continued).

To gain additional understanding of students' attitudes toward primary source readings and the comparative challenges students faced between the two methods of analyzing primary source documents, the instructor added four statements to the "Student Perception of Instruction" form. Students responded to these statements using the same four possible responses that they used to respond to statements about instruction. The four statements follow:

16. Primary source readings help me understand U.S. history better.

17. If I put some effort into it, I feel capable of completing primary source assignments in
     this course.

18. When reading primary source documents, I find it helpful to read two or more
     documents (providing different points of view) on the same topic.

19. For me, course assignments on primary source readings are confusing and/or difficult.

Statements 17 and 19 are most relevant for this study. Student responses to these statements were assigned points as described in the previous section concerning student perception of instruction. Student ratings of statements 17 and 19 are found in Table B2. Statement 17 indicates that students in the experimental group felt somewhat more capable of completing primary source assignments than did students in the control group. Since statement 19 was posed in reverse, it is important to note that the lower score in the control group indicates that these students felt less confusion or had less difficulty in attempting to complete assignments on primary source documents than students in the experimental group. Results for these two statements seem somewhat contradictory.

Appendix B. (Continued).

Perhaps experimental group students felt more capable than control group students of

completing the assignments while at the same time they experienced a higher level of

confusion than did students who were required to answer textbook questions on the

documents. Both groups seemed to find the assignments difficult at times.

Table B2.

Students' Reactions to Instructional Method

Statement	Experimental	Control
17.	3.70	3.26
19.	1.90	2.32

Appendix C

Drop Survey and Student Responses

Appendix C. (Continued).

Drop Survey

The researcher called each student who dropped or quit attending class and asked why he or she dropped the course. The following list was read to the student, and he or she was asked to answer honestly. Table C1 contains student responses.

The main reason I dropped this course was because

1. I had personal/family conflicts (includes baby sitter problems, divorce, death or illness in family)

2. I had personal health problems (includes missing a lot of time due to illness)

3. I had transportation problems that made it difficult for me to attend class regularly.

4. I had financial problems.

5. I had work schedule conflicts.

6. I took on too much this semester and had to drop something.

7. This course was too much work/too hard

8. I was confused/didn't understand what was going on in this course.

9. I just didn't want to bother anymore

Appendix C. (Continued).

Table C1.

<u>Reasons for Student Drops</u>

Response	Experimental		Control	
	Female	Male	Female	Male
1	0	1	0	0
2	4	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	1	0
6	0	1	1	2
7	1	0	0	0
8	0	0	0	0
9	0	0	0	0

Appendix D

Demographic Survey and Student Responses

Appendix D. (Continued).

U. S. History from 1877
Demographic Survey

This information is for statistical purposes only and will not in any way affect your grade in this course. Please answer on the SCANTRON sheet provided. Be sure to include your social security number and name.

1. Gender:
   a. female
   b. male

2. Race/Ethnicity:
   a. American Indian/Alaskan Native
   b. Asian or Pacific Islander
   c. Black non-Hispanic
   d. Hispanic
   e. White non-Hispanic

Questions 3 and 4 concern your age on the first day of class:

3. On the first day of this course, I was
   a. under 20
   b. 20-21
   c. 22-24
   d. 25-29
   e. none of the above

4. On the first day of this course, I was
   a. 30-34
   b. 35-39
   c. 40-49
   d. 50 or over
   e. none of the above

5. Student status:

   a. full-time degree seeking student
   b. part-time degree seeking student
   c. full -time other credit student
   d. part-time other credit student

Appendix D. (Continued).

Polk Community College requires some students to take college prep courses in reading, writing, and mathematics based on entry test scores. Questions 6-8 relate to these courses. If your situation does not fit these options, please see me.

6. Concerning College Prep **Reading** courses, which statement best describes your situation?
> a. I was not required to take any College Prep Reading Courses.
> b. I did not have to take College Prep Reading I, and I have passed College Prep Reading II.
> c. I have completed and passed College Prep Reading I and II.
> d. I am currently enrolled in College Prep Reading II.
> e. I have not completed my College Prep Reading requirements, and I am **not** enrolled in College Prep Reading II.

7. Concerning College Prep **Writing** courses, which statement best describes your situation?
> a. I was not required to take any College Prep Writing Courses.
> b. I did not have to take College Prep Writing I, and I have passed College Prep Writing II.
> c. I have completed and passed College Prep Writing I and II.
> d. I am currently enrolled in College Prep Writing II.
> e. I have not completed my College Prep Writing requirements, and I am **not** enrolled in College Prep Writing II.

8. Concerning College Prep **Mathematics** courses, which statement best describes your situation?
> a. I was not required to take any College Prep Math Courses.
> b. I did not have to take College Prep Math I, and I have passed College Prep Math II.
> c. I have completed and passed College Prep Math I and II.
> d. I am currently enrolled in College Prep Math II.
> e. I have not completed my College Prep Math requirements, and I am **not** enrolled in College Prep Math II.

9. Which of the following statements best describes your progress in **English composition** (Communications) requirements?
> a. I have passed both College Composition I and II or their equivalents, thus I have completed my English composition requirements.
> b. I have not yet begun my English composition requirements.
> c. I am currently taking College Composition I (ENC 1101).
> d. I have passed College Composition I (ENC 1101) or its equivalent at another educational institution, but I **am not** currently enrolled in College Composition II (ENC 1102).
> e. I have passed College Composition I (ENC 1101) or its equivalent at another educational institution, and I **am** currently enrolled in College Composition II (ENC 1102).

Questions 10 and 11 concern your expected major.

10. Do you plan to major in any of the following?
> a. English
> b. Humanities or Fine Arts, including
> c. History or Social Sciences (Political Science, Economics, Psychology, etc.)
> d. Mathematics or engineering
> e. other or undecided

11. Do you plan to major in any of the following?
> a. Natural Science
> b. Business
> c. Communications
> d. Education
> e. other or undecided

Appendix D. (Continued).

*Questions 12-18 relate to your course work in social sciences in **high school.***

12. How many semesters of **U.S. History** did you take from **grades 9 to 12?**
> a. I did not take any U.S. History courses from grades 9-12.
> b. one semester
> c. two semesters
> d. three semesters
> e. four or more semesters

13. Did you take one or more semesters of **government or political science** from **grades 9 to 12**?
> a. I did not take any government or political science courses in grades 9-12.
> b. I took one semester of government or political science from grade 9-12.
> c. I took more than one semester of government or political science from grade 9-12.

14. Did you take one or more semesters of **economics** from **grade 9-12**?
> a. I did not take any economics courses in grades 9-12.
> b. I took one semester of economics from grade 9-12.
> c. I took more than one semester of economics from grade 9-12.

15. Did you take one or more semesters of **geography** from **grade 9-12**?
> a. I did not take any geography courses in grades 9-12.
> b. I took one semester of geography from grade 9-12.
> c. I took more than one semester of geography from grade 9-12.

16. Did you take one or more semesters of **psychology** from **grade 9-12**?
> a. I did not take any psychology courses in grades 9-12.
> b. I took one semester of psychology from grade 9-12.
> c. I took more than one semester of psychology from grade 9-12.

17. Did you take one or more semesters of **sociology** from **grade 9-12**?
> a. I did not take any sociology courses in grades 9-12.
> b. I took one semester of sociology from grade 9-12.
> c. I took more than one semester of sociology from grade 9-12.

18. Did you take one or more semesters of **Western or World Civilizations or History** from **grade 9-12**?
> a. I did not take any Western or World Civilizations or History courses in grades 9-12.
> b. I took one semester of Western or World Civilizations or History from grade 9-12.
> c. I took two semesters of Western or World Civilizations or History from grade 9-12.
> d. I took three or more semesters of Western or World Civilizations or History from grade 9-12.

*Questions 19-25 pertain to your course work in the social sciences at the **college or university** level.*

19. How many semesters of **U.S. History** have you completed and passed at Polk Community College or at another two or four year **college or university**? (**DO NOT COUNT THIS COURSE**)
> a. I have not taken any U.S. History courses. (This course is my first.)
> b. I have taken a U.S. History course, but I withdrew or did not pass.
> c. I have completed and passed one semester of U.S. History.
> d. I have completed and passed two semesters of U.S. History.
> e. I have completed and passed three or more semesters of U.S. History.

20. How many semesters of **government or political science** have you completed and passed at Polk Community College or at another two or four year **college or university**?
> a. I have not taken any college level government or political science courses.
> b. I have taken a government or political science course, but I withdrew or did not pass.
> c. I have completed and passed one semester of government or political science.
> d. I have completed and passed two or more semesters of government or political science.

Appendix D. (Continued).

21. How many semesters of **economics** have you completed and passed at Polk Community College or at another two or four year **college or university**?
    a. I have not taken any college level economics courses.
    b. I have taken an economics course, but I withdrew or did not pass.
    c. I have completed and passed one semester of economics.
    d. I have completed and passed two or more semesters of economics.

22. How many semesters of **geography** have you completed and passed at Polk Community College or at another two or four year **college or university**?
    a. I have not taken any college level geography courses.
    b. I have taken a geography course, but I withdrew or did not pass.
    c. I have completed and passed one semester of geography.
    d. I have completed and passed two or more semesters of geography.

23. How many semesters of **psychology** have you completed and passed at Polk Community College or at another two or four year **college or university**?
    a. I have not taken any college level psychology courses.
    b. I have taken a psychology course, but I withdrew or did not pass.
    c. I have completed and passed one semester of psychology.
    d. I have completed and passed two or more semesters of psychology.

24. How many semesters of **sociology** have you completed and passed at Polk Community College or at another two or four year **college or university**?
    a. I have not taken any college level sociology.
    b. I have taken a sociology course, but I withdrew or did not pass.
    c. I have completed and passed one semester of sociology.
    d. I have completed and passed two or more semesters of sociology.

25. How many semesters of **Western or World Civilizations or History** have you completed and passed at Polk Community College or at another two or four year **college or university**?
    a. I have not taken any college level Western or World Civilizations or History courses.
    b. I have taken a Western or World Civilizations or History course, but I withdrew or did not pass.
    c. I have completed and passed one semester of Western or World Civilizations or History.
    d. I have completed and passed two or more semesters of Western or World Civilizations or History.

*Questions 26-28 refer to courses you might have taken in **critical thinking abilities or skills**.*
26. Have you ever taken a Critical Thinking course (or a course similarly labeled) that was devoted to teaching critical thinking skills or abilities?
    a. I have never taken a course devoted to learning how to think critically.
    b. I took one or more courses in **grades 9-12** devoted to learning how to think critically.
    c. I have taken one or more courses at a **college or university** devoted to learning how to think critically.
    d. I have taken one or more courses devoted to learning how to think critically, but this course was not in high school or college.

27. Did you take one or more courses in **grades 9-12** that explicitly taught critical thinking skills while incorporating them into regular course work? (Example: In an English course, in addition to grammar and literature assignments, the teacher discussed critical thinking skills and incorporated their use into class activities)
    a. yes
    b. no

28. Have you taken one or more courses at a **two or four year college or university** that explicitly taught critical thinking skills while incorporating them into regular course work? (Example: In an English course, in addition to grammar and literature assignments, the teacher discussed critical thinking skills and incorporated their use into class activities)
    a. yes
    b. no

Appendix D. (Continued).

Table D1.

Selected Demographic Characteristics of Student Sample by Group

	Exp. (n = 29)		Control (n = 23)		Total (n = 52)	
Question	Freq.	%	Freq.	%	Freq.	%
#5 Student Status						
FT degree seeking	21	72.41	10	43.48	31	59.62
PT degree seeking	4	13.79	11	47.83	15	28.85
Other credit	4	13.79	2	8.70	6	11.54
#9 Engl. Comp. Req.						
0 completed	5	17.24	5	21.74	10	19.23
1 completed	11	37.93	10	43.48	21	40.38
2 completed	13	44.83	8	34.78	21	40.38
#12 U. S. History (H. S.)						
1 semester	4	13.79	3	13.04	7	13.46
2 semesters	17	58.62	14	60.87	31	59.62
3 or more semesters	8	27.58	6	26.08	14	26.92

Appendix D. (Continued).

Table D1, continued.

Question	Exp. ($\underline{n}$ = 29)		Control ($\underline{n}$ = 23)		Total ($\underline{n}$ = 52)	
	Freq.	%	Freq.	%	Freq.	%
#18 Western/World						
History (H. S.)						
0 Semesters	3	10.34	8	34.78	11	21.15
1 Semester	11	37.93	7	30.43	18	34.62
2 or more Semesters	15	51.73	8	34.78	23	44.23
# 19 U. S. History						
(College)						
0 semesters	24	82.76	18	78.26	42	80.77
1 or more semesters	5	17.24	5	21.74	10	19.23
#25 Western/World						
History (College)						
0 semesters	26	89.66	21	91.30	47	90.38
1 or more semesters	3	10.34	2	8.70	5	9.61
# 26 Critical Th. Course						
None	24	82.76	16	72.73	40	78.43
High School	3	10.34	4	18.18	7	13.73
College or other	2	6.90	2	9.09	4	7.84

Appendix D. (Continued).

Table D1, continued.

Question	Exp. (n = 29)		Control (n = 23)		Total (n = 52)	
	Freq.	%	Freq.	%	Freq.	%
# 27 Critical Thinking						
Included (High School)						
Yes	17	58.62	13	59.09	30	58.82
No	12	41.38	9	40.91	21	41.18
# 28 Critical Thinking						
Included (College)						
Yes	11	37.93	7	31.82	18	35.29
No	18	62.07	15	68.18	33	64.71

Note. Percentages may not add up to 100 due to rounding. Frequencies may not add up to

column n due to missing data.

Appendix E

History Content Exam

Appendix E. (Continued).

U. S. HISTORY FROM 1877 TEST

No Permission to Publish

The questions on this examination were selected from the following:

Educational Testing Service. (1990). American history and social studies achievement test, form 3EAC2. In <u>The college board achievement tests</u> (pp.165-91). New York: College Entrance Examination Board.

Educational Testing Service. (1994). American history and social studies subject test, form K-30AC. In <u>The official guide to SATII: subject tests</u> (pp.65-93). College Entrance Examination Board.

Appendix F

Student Interviews

Appendix F. (Continued).

Interview 1: Control

Interviewer: I appreciate your willingness to help with our research. I will be taping our conversation.
        State the date of interview, students' name and section.
        One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal.
        We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. How difficult (hard to do or understand) has it been for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
Probe: (If student found these assignments difficult) To what extent have you felt a sense of frustration or concern that you might be unable to complete the questions or remain confused about their meaning?   Would you say that you found these assignments not at all frustrating, a little frustrating, somewhat frustrating, or extremely frustrating?
Probe:
Can you comment further on any difficulties you found or frustrations you felt in trying to complete these assignments?

2. How would you define critical thinking?
Probe: (If the student cannot provide a definition) What are some characteristics or aspects of critical thinking?

3. So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

4. Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
Probe: Please explain your answer.

5. Can you think of some examples in which abilities you've gained by reading and analyzing primary source documents relate to practical situations in your life?

6. Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?

7. At any time during this semester, have you considered dropping this course?
Probe: If so, why? Was the difficulty of primary source document assignments a concern to you?

8. Any additional comments?

Appendix F. (Continued).

Interview 1: Experimental

Interviewer: I appreciate your willingness to help with our research. I will be taping our conversation.
>**State the date of interview, students' name and section.**
>One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal. This section of U.S. History from 1877 has emphasized using **elements of reasoning** found on your "Reasoning about History" handouts (point of view, purpose, concepts, inferences, etc.) to help you analyze historical documents.
>We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. How difficult (hard to do or understand) has it been for you to complete the "Reasoning about History" questions on primary documents? Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
Probe: (If student found these assignments difficult) To what extent have you felt a sense of frustration or concern that you might be unable to complete the questions or might remain confused about their meaning?   Would you say that you found the assignments not at all frustrating, a little frustrating, somewhat frustrating, or extremely frustrating?
Probe:
Can you comment further on any difficulties you found or frustrations you felt in trying to complete these assignments?

2. How would you define critical thinking?
Probe: (If the student cannot provide a definition) What are some characteristics or aspects of critical thinking?

3. So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

4. Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
Probe: Please explain your answer.

5. Can you think of some examples in which abilities you've gained by reasoning about primary source documents relate to practical situations in your life?

6. Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?

7. At any time during this semester, have you considered dropping this course?
Probe: If so, why? Was the difficulty of primary source document assignments a concern to you?

8. Any additional comments?

Appendix F. (Continued).

Interview 2: Experimental

Interviewer: State the date of interview, students' name and section.
>Thanks again for helping with our research. I will be taping our conversation.
>Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. At this point in the course, how difficult (hard to do or understand) is it for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
Probe: (If student still find these assignments difficult) What do you find difficult about them?
Can you comment further on any difficulties you found or frustrations you feel in trying to complete these assignments?
Probe: Do these assignments seem easier than earlier in the semester or just as difficult?

2. How would you define critical thinking?
Probe: (If the student cannot provide a definition) What are some characteristics or aspects of critical thinking?

3. So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

4. Can you apply anything you've learned in this course about thinking critically to practical situations in your life?

5. Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
Probe: Please explain your answer.

6. Can you apply anything you're learning about history to practical situations in your life?

7. Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?

8. Any additional comments?

Appendix F. (Continued).

Interview 2: Control

Interviewer: State the date of interview, students' name and section.
Thanks again for helping with our research. I will be taping our conversation.
Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. At this point in the course, how difficult (hard to do or understand) is it for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
Probe: (If student still find these assignments difficult) What do you find difficult about them?
Can you comment further on any difficulties you found or frustrations you feel in trying to complete these assignments?
Probe: Do these assignments seem easier than earlier in the semester or just as difficult?

2. How would you define critical thinking?
Probe: (If the student cannot provide a definition) What are some characteristics or aspects of critical thinking?

3. So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

4. Can you apply anything you've learned in this course about thinking critically to practical situations in your life?

5. Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
Probe: Please explain your answer.

6. Can you apply anything you're learning about history to practical situations in your life?

7. Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?

8. Any additional comments?

Appendix F. (Continued).

Interview 1: Experimental
Paula, 8TR
Feb. 10, 1998

*Interviewer***:** I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal. This section of U.S. History from 1877 has emphasized using **elements of reasoning** found on your "Reasoning about History" handouts (point of view, purpose, concepts, inferences, etc.) to help you analyze historical documents.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?

Student: Well, at first, it was very hard for me. I guess I'd really never done anything along the lines of critical thinking. But I'm starting to understand more about it, and its getting a little bit easier, but there are still one or two areas I have at least some difficulty with. But it's a little easier, and it does make me stop and think quite a bit.

Interviewer: To what extent have you felt a sense of frustration or concern that you might be unable to complete the questions or might remain confused about their meaning?   Would you say that you found the assignments not at all frustrating, a little frustrating, somewhat frustrating, or extremely frustrating?

 Student: Well, again, at the beginning, I felt some frustration, but after maybe the first two weeks, um. In fact the one we just worked on, I really kind of got into. There was maybe one question on there, one area, I had a little difficulty with. The rest of it, I didn't have any frustration at all.

2. *Interviewer:* How would you define critical thinking?

Student: Hum! Well, I guess analyzing, taking it apart, looking deeper into what you're reading such as the purpose, things like, what might be meant that you might overlook if you just scan it.

3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

Student: (silence) That's a hard one. I think probably trying to get at the key ideas or issues that the document focuses on.

4. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?

Student: Yes.

Interviewer: Could you explain that a little further?

Student: It's made me read and understand more because we're looking at the whole picture instead of thinking what they mean on the surface, go a little bit deeper, get more ideas about what the document might mean.

5. *Interviewer:* Can you think of some examples in which abilities you've gained by reading and analyzing primary source documents relate to practical situations in your life?

Student: Well, it teaches me to look a little bit deeper, a little harder at things in general. It's honestly making me stop and think a little bit harder at work when I'm there. I guess I can't think of anything in particular, except that it does make me stop and think a little bit harder.

6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?

Student: Well, I think the sheet that you gave out will probably do it! That's probably been the biggest thing that has helped me.

7. *Interviewer:* At any time during this semester, have you considered dropping this course?

Student: No.

8. *Interviewer:* Any additional comments?

Student: No.

Appendix F. (Continued).

Interview 1: Experimental
Ashley, 9 MWF
Feb. 11, 1998

*Interviewer***:** I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal. This section of U.S. History from 1877 has emphasized using **elements of reasoning** found on your "Reasoning about History" handouts (point of view, purpose, concepts, inferences, etc.) to help you analyze historical documents.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
    Student: Not too hard.
2. *Interviewer:* How would you define critical thinking?
    Student: (pause) Analyzing information and thinking about it more in depth.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
    Student: (pause) Trying to think about what the information is actually saying. And what it actually means.
4. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
    Student: Yes.
    Interviewer: Could you explain a little further?
    Student: It goes into detail and explains what happened and when it happened, and more about how the people actually felt and what they went through.
5. *Interviewer:* Can you think of some examples in which abilities you've gained by reasoning about primary source documents relate to practical situations in your life?
    Student: Situations of today like social situations, social issues, economic issues of today, government, things that are going on with government today, and decisions you make.
6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
    Student: Working in groups and sharing with each other what answers you have. Actually thinking about it more and having a more open mind about it.
7. *Interviewer:* At any time during this semester, have you considered dropping this course?
    Student: No.
8. *Interviewer:* Any additional comments?
    Student: It's helping me a lot to learn this history.

Appendix F. (Continued).

Interview 1: Experimental
Kendra, 9 MWF
Feb. 12, 1998
Interview: Experimental

*Interviewer***:** I appreciate your willingness to help with our research. I will be taping our conversation.

        One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal. This section of U.S. History from 1877 has emphasized using **elements of reasoning** found on your "Reasoning about History" handouts (point of view, purpose, concepts, inferences, etc.) to help you analyze historical documents.

        We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

 1. Interviewer: How difficult (hard to do or understand) has it been for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?

   Student: Um, for me I think, because I don't really understand the questions all the time, I thought they were like, between somewhat hard and extremely difficult. Either one.

   Interviewer: To what extent have you felt a sense of frustration or concern that you might be unable to complete the questions or might remain confused about their meaning?   Would you say that you found the assignments not at all frustrating, a little frustrating, somewhat frustrating, or extremely frustrating?

   Student: About the questions? About like those? (*Interviewer:* Since you felt they were difficult, did you feel like you might not be able to do them?) *Student:* Yea, a lot of the time. I got really frustrated about it. If I could understand the questions….

2. *Interviewer:* How would you define critical thinking?

   Student: Um, I think like you're trying to take any thing that happened, (pause) but (pause) this is hard to do.

   Interviewer: Any aspects of thinking critically, characteristics that you can think of?

   Student: (silence, followed by expression of frustration) Not really.

   Interviewer: Ok, let's just go to the next one.

3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

   Student: I don't even understand, sometimes the documents are kind of confusing, like understanding what they mean, you know, some of the ways they say it and stuff, a couple of them. And trying to apply it to the questions too.

4. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?

   Student: In a way. Yea, because I didn't know all that stuff about the KKK and groups. Yea, so, a lot of it.

5. *Interviewer:* Can you think of some examples in which abilities you've gained by reasoning about primary source documents relate to practical situations in your life?

   Student: (pause) No, I can't.

6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?

   Student: (pause) I can't think of anything since we've started. It's kind of hard.

7. *Interviewer:* At any time during this semester, have you considered dropping this course?

   Student: Yes.

   Interviewer: Can you tell me why? Was the difficulty of primary source document assignments a concern to you?

   Student: That's one, because I feel like I can't get them done all the time because they're so hard. But I'm not good in history. I've never liked it, and I've already taken one course in it and I, last term. I was really taking it because of Brandon, but, yea, so, I'm really not good in history so it helps me to learn less.

8. *Interviewer:* Any additional comments?

   Student: Not really.

Appendix F. (Continued).

Interview 1: Experimental
Frank, 8TR
Feb. 13, 1998

*Interviewer***:** I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal. This section of U.S. History from 1877 has emphasized using **elements of reasoning** found on your "Reasoning about History" handouts (point of view, purpose, concepts, inferences, etc.) to help you analyze historical documents.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
   Student: The assignments haven't been too bad. It's pretty easy as far as, you know, going through and being able to read and pick them out, but, um, for, like, some of the questions, like when you try to figure out the inferences, those are a little more difficult. But on the whole it's pretty, you know, it's not too hard.
2. *Interviewer:* How would you define critical thinking?
   Student: (Clears throat) Like really analyzing whatever situation you have, to sit back and like think about it, figure out, you know, the pros and the cons, the pluses and the minuses. Like really thinking heavily on what you're doing or what's going on there.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
   Student: (pause) Trying to, um, I guess for me it'd be trying to just disregard facts, you know, as far as, you know, getting down to the heart of the matter instead of just superficially looking . OK, here's this fact, here's this fact, you know, just really get into it . Because sometimes if you just get the facts, you know you just kind of go with those, you don't bother with thinking into it any more. I think for me that's what it is.
4. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
   Student: Yes.
   Interviewer: Could you explain that further?
   Student: Well, like um I guess the biggest, the first thing that came to mind is when we did the Indians, for the, you know, the dance. I mean first of all, I never knew that even happened, but then when we learned it even happened, as we read we learned why and how and what really went on. That's why I say yeh.
5. *Interviewer:* Can you think of some examples in which abilities you've gained by reasoning about primary source documents relate to practical situations in your life?
   Student: Yeh, I mean I would say, um, I mean, I guess, you could use that in relationships, I mean because you can you know, try to figure out, you know, where is this person coming from, what do they want, you know? And you really try to, you know, analyze what's going on so that you're really discussing what you need to be. You can use it for jobs. (pause) Those are two that come to mind.
6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
   Student: (pause). No, no.
7. *Interviewer:* At any time during this semester, have you considered dropping this course?
   Student: (pause) The first day, but that's just because it was an 8 AM class.
   Interviewer: So, was the difficulty of the primary source documents a concern to you?
   *Student: N*o, no.
8. *Interviewer:* Any additional comments?
   Student: No, that's it.

Appendix F. (Continued).

Interview 1: Control
Melissa, 11 TR
Feb. 10, 1998

*Interviewer***:** I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
    Student: The questions, if you read it thoroughly, are not too difficult. Um, it's broken down into two parts, like two groups of questions. The first ones are pretty easy if you read it, but the second ones, it asks you, like, certain people's opinions on it and you have to go back and, like, read through it in order to answer those.
    Interviewer: The second section you're referring to is the section entitled critical thinking?
    Student: Yea, you have to go back and pick out parts in order to answer it.
    Interviewer: Have you found this at all frustrating? The ones you found difficult, did you feel concerned that you might not be able to complete the questions or remain confused about their meaning?
    Student: No, if I get confused, we break into groups, then they can explain them, and it's pretty easy after that.
2. *Interviewer:* How would you define critical thinking?
    Student: Reading something, pulling out opinions, and then converting it into something else.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
    Student: Um, that's difficult. I'd say the most difficult is comparing two people, like a pro and con type thing. Um, comparing like with the Indians, you had to decide whether it was a massacre or whether it was a fair battle. That was kind of difficult to decide.
4. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
    Student: Yea, because it's more like reading a story. You're not just sitting there learning dates and people's names and their positions.
5. *Interviewer:* Can you think of some examples in which abilities you've gained by reading and analyzing primary source documents relate to practical situations in your life?
    Student: I really can't compare it. I just look at it as reading a story and gaining that information on it.
6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
    Student: Well, I like the books that we're reading out of. I don't so much like the textbook. The textbook doesn't go into detail with anything.
7. *Interviewer:* At any time during this semester, have you considered dropping this course?
    Student: No.
8. *Interviewer:* Any additional comments?
    Student: No.

Appendix F. (Continued).

Interview 1: Control
Ryan, 11TR
Feb. 12, 1998

*Interviewer***:** I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
    Student: Not very hard. Uh, you just read the chapters and they're not too hard.
    Interviewer: You're referring to both sets of questions?
    Student: Yeh.
2. *Interviewer:* How would you define critical thinking?
    Student: Analyzing, uh, thinking about things more deeply. Getting down to what something really means.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
    Student: (pause) Trying to go deep into issues, see them from,uh, other points of view.
4. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
    Student: Yes. It, like, makes it more real, with, uh, different people and ideas. The textbook is just facts and, uh, stuff, so you learn what was really going on.
5. *Interviewer:* Can you think of some examples in which abilities you've gained by reading and analyzing primary source documents relate to practical situations in your life?
    Student: (pause) Not really.
6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
    Student: No.
7. *Interviewer:* At any time during this semester, have you considered dropping this course?
    Student: No. I like history.
8. *Interviewer:* Any additional comments?
    Student: No.

Appendix F. (Continued).

Interview 1: Control
Melisa, 6:30 Mon. Evening
Feb. 16, 1998

Interviewer: I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
   Student: Not too hard
2. *Interviewer:* How would you define critical thinking?
   Student: Well, (long pause) having to think, like, more deeply than you would just to answer a question.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
   Student: (sighs) Just having to think.
4. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
   Student: Yes.
   Interviewer: Could you explain further?
   Student: Um, it's like a repetition of what you've already read in the book, so it just kind of elaborates on it. It kind of helps you understand it more.
5. *Interviewer:* Can you think of some examples in which abilities you've gained by reading and analyzing primary source documents relate to practical situations in your life?
   Student: No.
6. *Interviewer:* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
   Student: I think the structured controversy helps.
   Interviewer: The activity we're going to be doing next week?
   Student: Yes.
7. *Interviewer:* At any time during this semester, have you considered dropping this course?
   Student: Yes.
   Interviewer: Why? Was the difficulty of the primary source assignments a concern to you?
   Student: I think it was just the amount of reading that you had to do.
8. *Interviewer:* Any additional comments?
   Student: No.

Appendix F. (Continued).

Interview 1: Control
Shanna, 6:30 Mon. Evening
Feb. 16, 1998

Interviewer: I appreciate your willingness to help with our research. I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
   Student: Not too hard.
2. *Interviewer:* How would you define critical thinking?
   Student: Um, it's just, you know, read the stuff and then thinking about how they feel about it. You know, thinking in other ways than just your point of view about things.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
   Student: Reading all of the documents.
4. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
   Student: Yea. You get different opinions and stuff. It helps you get a bigger view of the stuff.
5. *Interviewer:* Can you think of some examples in which abilities you've gained by reasoning about primary source documents relate to practical situations in your life?
   Student: No. I don't know. Um, you might have to explain that a little bit better.
   Interviewer repeats question.
   Student: I guess I don't know.
6. *Interviewer*: Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
   Student: Well, the reading helps a lot. It helps me to understand the stuff more.
7. *Interviewer:* At any time during this semester, have you considered dropping this course?
   Student: No.
8. *Interviewer:* Any additional comments?
   Student: Not really.

Appendix F. (Continued).

Interview 2: Experimental
JaDawn, 9MWF
March 17, 1998

Note: JaDawn replaces a student who dropped. This is her first and only interview.

*Interviewer***:** I certainly appreciate your willingness to help with our research. As you see, I will be taping our conversation.

One of the purposes of this course is to help you become a better critical thinker, not only in history, but also in everyday life. Learning to read and analyze primary source documents is one method being used to achieve this goal. This section of U.S. History from 1877 has emphasized using **elements of reasoning** found on your "Reasoning about History" handouts to help you analyze historical documents.

We want to learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Please answer the questions I ask honestly and thoroughly. Your answers will not affect your grade in this course.

1. *Interviewer:* How difficult (hard to do or understand) has it been for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
    Student: Not too hard
2. *Interviewer:* How would you define critical thinking?
    Student: It's …. The worksheets or just in general?
    Interviewer: In general.
    Student: In general, I think it's needed, necessary too, like in classes.
    Interviewer: Can you give me any characteristics of critical thinking or aspects? What it actually is?
    Student: It's going in depth into the situation and/or event.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
    Student: (pause*)* I can't think of one right off hand.
4. Interviewer: Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
    Student: Yes.
    Interviewer: Could you explain a little further?
    Student: Um, by reading the documents it makes us, like, understand actual people and what they actually went through. Not just like the gloss over that the text gives in general.
 5. *Interviewer* Can you think of some examples in which abilities you've gained by reasoning about primary source documents relate to practical situations in your life?
    Student: Um, yes. Now I don't just go by surface value. I, like, look at a situation more in depth and I go into it and analyze in my mind what's really going on.
6. *Interviewer* Can you identify anything else (activities we've done, materials we've used) in this course that has helped you improve as a critical thinker?
    Student: Um, the debate that we had in class, that was really good because that helped me understand what was going with what, I mean, the Spanish American War. And like discussing and stuff, like as we go through the source documents we discuss them in here and everyone has their answers.
7. *Interviewer* At any time during this semester, have you considered dropping this course?
    Student: No.
8. *Interviewer:* Any other comments?
    Student: No.

Appendix F. (Continued).

Interview 2: Control
Melissa, 11 TR
March 17, 1998

Interviewer: Thanks again for helping with our research. I will be taping our conversation.
      Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult is it for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
  Student: Well, after you read it, um, I highlight in my book as I read, and then answering the questions is not very difficult. It's fairly easy. Um, the critical thinking questions you have to go back and think about it more than you do the first few questions at the end.
2. *Interviewer:* How would you define critical thinking?
  Student: Um, reading something and then applying it to different things, and coming up with an answer. The answer is not stated for you in the book. You have to think about it.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
  Student: None of it's really difficult. I mean, as long as you think of something and you can put it down, and it's in the general area. Most of the time it could be right.
4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?
  Student: No, not really. I mean, just news articles and things that you read, when you talk about them and go back and look at them.
5. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
  Student: Yea, it helps you more because in the other book you read through it. But in this one you get a point of view because it's a person's story. And you understand it a little bit more because there's more about it in there.
6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?
  Student: Not really. You just understand that it was difficult then, and you take for granted these things that these people didn't have.
7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?
  Student: Um, the lectures are pretty good. The notes help a lot, other than just , you know, reading out of the book.
8. *Interviewer:* Any other comments?
 Student: No.

Appendix F. (Continued).

Interview 2: Control
Ryan, 11 TR
March 17, 1998

Interviewer: Thanks again for helping with our research. As you can see, I will be taping our conversation.
      Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult is it for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
   Student: The assignments aren't hard at all. Uh, they're easy, they're thorough, but the information they give you, they give you a lot of information, and, uh, since they give you so much information, the questions tend to be easy. Uh, because there's a lot of information to go on for answering the questions.
2. *Interviewer:* How would you define critical thinking?
   Student: Critical thinking is analyzing, uh, what's given to you and, uh, you put your information that you know and the information that you're given and uh, you put the two together and you decide, uh, from all the facts that are given to you, what you think about a question is, to your answer.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
   Student: Uh, the most difficult aspect would probably be your, uh, yourself, uh, how you, uh, feel, how well you think you know the subject matter, if you're confident with the subject matter. Uh, probably the hardest thing I have is the confidence of what I know.
   Interviewer: Ok, of what you're going to say, or what your answer would be?
   Student: Right, of what I would say.
4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?
   Student: A lot of things deal with critical thinking. You have to be able to, uh, in any situation, whether working, you have to be able to attack a problem, and, uh, be able to look at it and find out what's wrong with it in order to fix what's wrong. So, critical thinking has a lot to do with, uh, things in the workplace.
5. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
   Student: Yes, it, ah, like, gives you a instead of what to find out about, uh, the history, uh, the questions, uh,are very informative. They make you, uh, other than reading for basic information, uh, they make you think about what you're reading, they give you more of a critical, uh, idea about what happened in the past.
6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?
   Student: *U*h, the history, uh, it tells me of what's happened before in the past, uh, of people's downfalls and failures, and also their successes and let's me know, uh, generally, because they're a map of what people have tried before, let's me know uh, what I'm to expect in the future of what I do.
7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?
   Student: Uh, I guess, just basically, uh, knowing the information, what's given to you. Uh, just being able to read it and cover it well. It makes you think about, uh, think about the problems that are given to you, uh, just being able to read the problems and understand them. So it's just basically your own self -training, uh, I would still say.
8. *Interviewer:* Any additional comments?
   Student: Uh, no, no other comments. Uh, I will say that from reading in the source books, I've learned that the source books are a lot more enlightening than first perceived. They say a lot about things in life that I didn't realize, apart from all the facts, that was once so.

Appendix F. (Continued).

Interview 2: Experimental
Ashley, 9 MWF
March 18, 1998

Interviewer: Thanks again for helping with our research. I will be taping our conversation.
	Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult is it for you to complete the "Reasoning about History" questions on primary documents?   Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
   Student: Not too hard. But they are getting easier than they were at the beginning of the term, you know. They are making more sense.
2. *Interviewer:* How would you define critical thinking?
   Student: Being able to look at a document or something of that nature and think about what it's actually saying more in depth than just what the main idea is.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
   Student: The assumptions. Their assumptions. Trying to figure out what the author is actually wanting to say and what they're thinking when they're writing.
4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?
   Student: Yes. (pause) Other situations, other things that you read, and some situations you're figuring out solutions.
5. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
    S*tudent:* Yes.
   Interviewer: Could you explain more?
   Student: It explains, it makes it easier, it explains it more. Because it's more into a real life situation.
6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?
   Student: Yes, because in a sense, history repeats itself. Decisions that were made in the twenties and thirties are being compared to situations and decisions being made today.
7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?
   Student: Working in groups, peer review, class discussions.
8. *Interviewer:* Any additional comments?
Student: No.

Appendix F. (Continued).

Interview 2: Experimental
Paula, 8 TR
March 19, 1998

Interviewer: Thanks again for helping with our research. I will be taping our conversation.

Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult (hard to do or understand) is it for you to complete the "Reasoning about History" questions on primary documents? Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?

  Student: Well, it's certainly easier than it was at the beginning, but I would say it's still somewhat difficult. It really stretches your mind.

  Interviewer: Are there particular aspects that are harder than others?

  Student: Trying to, I guess, see the bigger picture, the underlying thoughts that may not be so obvious.

2. *Interviewer:* How would you define critical thinking?

  Student: Seeing the big picture. Uh, the concepts and ideas, like the whole document as opposed to just what it appears to be on the surface.

3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?

  Student: Probably, trying to separate the different, the different ideas such as the concepts, conclusions, um, assumptions, that kind of thing. They all tend to run together.

4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?

  Student: Yes, I do to a degree just at work everyday. It's starting to show up a little more.

5. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?

  Student: Yes it has.

  Interviewer: Would you explain your answer?

  Student: Um, just, um, again, going in deeper, instead of just reading what's going on and what might be   obvious, you see more buried ideas you have to look for and therefore you learn more.

6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?

  Student: Oh yea, a lot. Um, just going deeper, stopping and thinking, looking deeper, and working through any situation.

7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?

  Student: Well, actually, um, I watch a lot of stuff on t.v., such as, um like, the History Channel. It's more interesting to me now. I've always thought it interesting, but it's even more so now. And I stop and see a lot more in it than I might have before.

8. *Interviewer:* Any additional comments?

  Student: No.

Appendix F. (Continued).

Interview 2: Experimental
Frank, 8 TR
March 19, 1998

Interviewer: Thanks again for helping with our research. As you see, I will be taping our conversation.
Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult (hard to do or understand) is it for you to complete the "Reasoning about History" questions on primary documents? Would you describe "Reasoning about History" assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
   Student: Not too hard. They're not really easy, I mean you have to do a little bit of thinking about them, but they're not actually too difficult. I'd say not very hard.
   Interviewer: Do these assignments seem easier than earlier in the semester or just as difficult?
   Student: Yea, now they do, a little bit.
2. *Interviewer:* How would you define critical thinking?
   Student: Um, you know, looking at all the information that you have, and comparing it to, you know, other documents you have. You need to look at the source, and the contextualization, and just really looking at the whole picture to determine, you know, to make a decision then.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
   Student: Um, for me it's, um, not just taking, you know, face value about what's there. Sometimes when you read that you just want to say, ok, that's fine, and just take that, what it is, without looking into it any more.
4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?
   Student: I'm sure we can. Um, yea, I mean, I remember when you asked me before, like in relationships you can, you know, any kind of relationships you have with people. Um, I mean, even in school. Just looking at, you know, when you do a lot of your papers, then you can kind of look at it that way, too.
5. *Interviewer:* Has reading and analyzing primary documents using "Reasoning about History" questions helped you learn more about U. S. history?
   Student: Yea. Um, just because you see more about, you know, in the documents that you read. You just see more, and you get more of a first hand experience than just reading in the text book. I mean, you know, like, you just read the textbook, you punch on a button, it's just fact, you know, but then when you actually hear this person say I was there, this is the story, you know, you kind of get more of a feel of what was actually going on. So, yea, I would say it does help.
6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?
   Student: (pause) I mean, I can't think of any.
7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?
   Student: (pause) Does that count like, the causation sheets that we've, you know, those kind of help. When you go with those, when you have to critically think that through, figure out what's going on and what happened. So I would say those would help some.
8. *Interviewer:* Any other comments?
   Student: No.

Appendix F. (Continued).

Interview 2: Control
Melisa, 6:30 Mon. Evening
March 30, 1998

Interviewer: Thanks again for helping with our research. I will be taping our conversation.
        Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult (hard to do or understand) is it for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
  Student: Not too hard
  Interviewer: Do they seem any easier than they did earlier in the semester?
  Student: A little bit, I guess, because I know they're asking for. It was more practice, so it was easier to answer.
2. *Interviewer:* How would you define critical thinking?
  Student: Um, having to go more into depth with the questions, having to use your knowledge about the subject and to find it better than just a regular direct answer, you'd have to go into depth with it.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
  Student: Well, in order to answer the questions, you have to be able to read the assignments and stuff, and there's a lot of reading to do. So I think that the more reading you have to do takes away from being able to answer questions.
4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?
  *Student: (*Pause) I guess it just helps you more to look at what's around and not just directly at the picture. You get to look at what's around and to observe it and know it, what's going on, and help you solve it.
5. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
  Student: Yes.
  Interviewer: Please explain your answer.
  Student: Um, it kind of gets, like, certain situations that happened during the period that you're studying, and it helps to enhance it. It gives you more of a detail of exactly what went on
6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?
  Student: No.
7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?
  Student: The study guides, having to know more about the subject than just knowing certain words and the definitions. But you actually have to understand what happened in that time period and be able to say it in your own words.
8. *Interviewer:* Any additional comments?
  Student: No.

Appendix F. (Continued).

Interview 2: Control
Shanna, 6:30 Mon. Evening
March 30, 1998

Interviewer: Thanks again for helping with our research. I will be taping our conversation.

　　　　Let me remind you that the purpose of these interviews is to help us learn more about the process students go through and the attitudes they develop as they try to improve as critical thinkers. Many of the questions will repeat what I asked in our first interview. Please answer the questions I ask honestly and thoroughly.

1. *Interviewer:* At this point in the course, how difficult (hard to do or understand) is it for you to complete the questions on the primary source readings at the end of each chapter? Would you describe the assignments as very easy, not too hard, somewhat difficult, or extremely difficult?
　Student: Not too hard.
　Interviewer: Do these assignments seem easier than earlier in the semester?
　Student: They're about the same.
2. *Interviewer:* How would you define critical thinking?
　Student: Using all that you can from the sources and just putting stuff together to try to figure out what's happening. Thinking hard.
3. *Interviewer:* So far in this course, what has been the most frustrating or difficult aspect of learning to think more critically?
　Student: It's just hard for me to read all of that. That's the hardest thing for me to do.
4. *Interviewer:* Can you apply anything you've learned in this course about thinking critically to practical situations in your life?
　Student: It's better to understand how people now are facing stuff, because they're still facing some of the same things that they were back then. Like trying to be equal, things like that.
5. *Interviewer:* Has reading and analyzing primary documents using questions at the end of each chapter helped you learn more about U. S. history?
　Student: Yes.
Interviewer: Would you explain your answer?
　Student: Well, it goes in deeper. Um, explanations of things which I didn't think were true, I mean, I didn't know a bunch of stuff that was in there. It gave a broader view of everything.
6. *Interviewer:* Can you apply anything you're learning about history to practical situations in your life?
　Student: I use what I learn in other classes. I mean, other classes that ask some of the same questions. I can use what I learn in here from the source book.
7. *Interviewer:* Can you identify anything in this course other than source reading assignments that has helped you improve as a critical thinker?
　Student: Um, the little worksheets that we do from time to time.
　Interviewer: Like the causation sheet? Is that what you're talking about?
　Student: Yea.
8. *Interviewer:* Any other comments?
　Student: Not really.

Appendix G

Letter of Permission from Participating Institution

Appendix G. (Continued).

Appendix G. (Continued).

Appendix H

Course Syllabus: U. S. History 1877 to the Present

Course Outline A – Experimental

Course Outline B – Control

Appendix H. (Continued).

BASIC COURSE INFORMATION
U. S. HISTORY: 1877-Today
AMH 1020, Section ____
Spring, 1998

INSTRUCTOR: Jenny Reed

PHONE MESSAGES: 297-1010 ext. 6229

OFFICE: LLC 2247 (Faculty Offices, Lakeland)

HOURS: **Lakeland**   MW 10:30-1:30, F 10:30-12:00

LAST DAY TO WITHDRAW: February 26

 TR 9:30-10:15; Mon. ev. 5:30-6:15

Winter Haven by appointment

DIVISION NAME AND LOCATION: Arts, Letters, and Social Sciences, Winter Haven Fine Arts Building, Room
        147. Phone: 297-1025

REQUIRED TEXTS:
1. Kennedy, Bailey, and Piehl (1996). The Brief American Pageant (Vol. 2).
2. Gorn, Roberts, and Bilhartz.(1995). Constructing the American Past: A Source Book of a People's History
        (Vol. 2, 2nd ed.).
3. Additional readings as assigned by the instructor.

COURSE GOALS AND OBJECTIVES:

The main purpose of this course is to improve your ability to think historically about major trends and patterns in U.S. history from 1877 to today. Further, you should increase your knowledge and understanding of historical concepts, facts, and ways of thinking; appreciate the value of an informed historical perspective; improve your ability to think consciously, deliberately, and skillfully; and use the insights and abilities you gain to make wise decisions about contemporary (including personal) issues and events. More specifically, through selected historical readings, purposeful discussions, and a variety of written activities, you will:

1. **learn to think historically** about cause and effect, change and continuity, and patterns and trends .

2. **enhance your knowledge of history and develop an informed historical perspective** as you acquire a better
        understanding of the historical forces and personalities affecting the process of historical change and shaping
        American life. We will analyze political, economic, social, religious, intellectual, and cultural characteristics
        of U.S. society and peoples from the time of the Civil War to the present. Factual knowledge necessarily
        serves as a foundation for thinking about historical concepts, and you will be expected to acquire a
        framework of facts, terms, and basic chronology of U.S. history. Major concepts we will explore include
        western civilization, sectional conflict, reconstruction, industrialization, urbanization, immigration, nativism,
        democracy, the frontier, reform movements, modernization, isolationism, nationalism, civil rights, and global
        interdependence. By the end of this course, you should understand and be able to communicate:
         - the impact of the Civil War and Reconstruction on politics, the economy, race relations, and culture in the
        South;
         - the change to an industrial economy in the United States after the Civil War;
         - the role of immigration and development of our pluralistic society;
         - the impact of industrialization on immigration, labor, politics, farmers, women, urbanization, education,
        etc.;
         - the reaction of progressive reform efforts toward economic, political, and social inequities in America
         generated by the rapid growth of industry;
         - the increasing role of centralized government in the United States
         - the changing foreign policy of the United States, as reflected in colonization following the Spanish-
         American War, isolationist tendencies, involvement in World War I and World War II, the Cold War, and
         other foreign programs of the United States in the twentieth century;
         - consequences of America's involvement in two world wars in the twentieth century including the
          changed position of the United States in the world since 1945;

Appendix H. (Continued).

     - the development and outcomes of civil rights movements;
     - amendments to and changing interpretations of the Constitution;
     - the continuing impact of religion on American society;
     - the implications of changing technology, environmental issues, the role of women, the position of blacks and other minorities, and other issues in the United States in the late twentieth century.

3. **develop abilities needed for informed, responsible citizenship, occupational success, and lifelong learning,** including working productively with others and critical thinking abilities such as considering various points of view fairly and identifying assumptions accurately.

COURSE REQUIREMENTS:

ATTENDANCE: Regular attendance is vital for successful completion of this course. Please be on time for **every class** and be prepared to participate in class discussions. Students who miss more than three hours of class time may be dropped from the course before the withdrawal date. Nevertheless, **if you decide to drop the course before the withdrawal date, it is your responsibility to notify student services and complete the necessary paperwork to avoid an "F".**

ACTIVE PARTICIPATION: While I will regularly use interactive lectures (**TAKE NOTES**) to convey fundamental organizing themes and concepts, much of the course will require you to engage actively in your own learning processes. Expect to think, to write, to listen, to discuss, to work together in groups, and to be held accountable for these activities. While taking greater control over your own learning processes may seem challenging or difficult at first, most students find this aspect of the course intellectually exciting. However you may feel, don't panic! I recognize that you have different learning styles and educational experiences. Hopefully, each of you will find some aspects of this course familiar and relatively easy, some things challenging, and many activities to develop your mind and expand your spirit. **Please communicate your questions or concerns. My goal is for you to enjoy learning history as well as to benefit intellectually from this course, but this can occur only if you do your part.**

RESOURCES: Lectures (**TAKE NOTES!!!**) and your two textbooks constitute your main sources of information. The Brief American Pageant provides many of the details that I will not have time to cover in lectures; it includes chronological information, maps, graphs, pictures, and special sections such as "Makers of America". You will find it helpful for completing written class assignments and for finding evidence, details, examples, etc. to support your arguments in essays and discussions. Constructing the American Past contains a variety of readings (primary documents) which bring the past alive and help develop your skills in critically interpreting and evaluating historical documents. Your exams, essays, and class discussion should reflect your familiarity with both textbooks. Lectures will emphasize themes and concepts; oral discussions, while based on the "facts" and readings found in your texts, will also focus on developing your ability to communicate at higher-levels of thinking. All of these: lectures, texts, source readings, discussions, films, etc. are vital to your success in this course. Feel free to consult outside reference material at any time, but in general this should not be necessary. ***IMPORTANT: If you need to improve your study skills and strategies (i.e., notetaking, textbook reading, writing essays), I strongly suggest that you view "Where There's a Will There's an A", available in the TLCC. You will need college level skills to do well in this course.

Appendix H. (Continued).

MAKE-UP WORK: Make-up exams are a constant problem: while some students have legitimate reasons for needing to make up an exam, others want to take an exam late due to poor time management or lack of preparation. The following policy is an attempt to be fair to everyone, including students who take exams at the scheduled time. 1) **Make-up exams will be available in the TLCC under my name/course name BEGINNING two days before an exam is scheduled until the beginning of class one week (7 days) following the exam. Check TLCC hours before you go.** 2) Exams may be completed BEFORE the regularly scheduled exam period if you know you must be absent, without grade penalty. 3) Make-up exams completed after the scheduled exam period will be **penalized as follows:** Within 48 hours (2 days)from the **beginning** time of the class period during which the exam was scheduled, -**5%**; within 96 hours (4 days), -**10%**; up to 7 days, -**20%**. The same penalties apply to late essays and quizzes. 3) You may petition me for full credit, but take the exam ASAP; I decide full-credit for late make-up work on an individual basis, but in most cases I regretfully must require an "official" excuse, such as a Doctor's note. 4) I do not allow drop grades, but additional assignments may be offered in "exchange" for a low grade (see me **early**).

COURSE ASSESSMENT:

Exams (4 @ 100 pts.)	400	A= 90-100 (not 89.99)
Multiple choice and		B= 80-89
written paragraphs		C= 70-79
Final Exam	200	D= 60-69
Essays (+1 optional essay)	100	F= below 60
[4-5 pages each]		
Map/date quizzes		This course requires a minimum of 2000 written words
(4 @ 25 pts.)	100	(Gordon Rule). This requirement will be met by essays,
Structured Controversy	80	written exam questions and informal writing assignments.
Daily written assignments	approx.120	
(vary 5-10 pts.)		
TOTAL	**approx. 1000**	

Appendix H. (Continued).

COURSE OUTLINE A (tentative)
U.S. History 1877 -Today

You should complete all readings (text and other assignments) by the beginning of the week under which they appear on this syllabus unless otherwise instructed**. Be prepared to contribute.**

AP = Kennedy, Bailey, and Piehl The Brief American Pageant;
SOURCE = Constructing the American Past: A Source Book of a People's History

I. Industrialization and Urbanization, 1865-1900

    Week 1 (   ) Introduction; Overview of U.S. History; Reconstruction; Pre-testing
    Readings: AP Chapter 24
    Assignments: the Constitution (AP Appendix pp. vi-xxiv)- Skim, read selections, note organization, and
        answer assigned questions (keep for later).

    Week 2 (   ) Pre-testing; Reconstruction, continued; Gilded Age
    Readings: AP Ch.25, 26; SOURCE Introduction and Chapter 1 (Docs. 1, 2, 3)*
    Assignments: SOURCE Ch. 1: for each document, briefly summarize the (1) purpose, (2) point of view
        (author/source), (3) major issue(s) under consideration, (4) historical context, (5) information used
        to support position, and (6) essential concepts. (These assignments will be discussed each week)

    Week 3 (   ) Industrialization; Immigration and Urbanization; Daily Life and Popular Culture
    Readings: AP Chapter 27; "Makers of America": The Chinese (p.344), The Poles (p.368), The Italians
        (p.378), The Puerto Ricans (p.424); SOURCE Ch. 2 (Docs. 1, 2, 3)*; SOURCE Ch. 4 (entire)*
    Assignments: SOURCE Ch.2 "Reasoning about History" handouts on each assigned document

    Week 4 (   ) The Great West and the Agricultural Revolt; Populism
    Readings: AP Ch.28; SOURCE Ch.3 (Docs.1, 2 [first two letters], 4, 9)*
    Assignments: SOURCE Ch.3 "Reasoning about History" for Docs. 1, first letter in 2, and 4; Civilization
        Summary Worksheet: America in the 1890s (in class)
- MAP/DATE QUIZ 1

II. World Power, Progressivism, and World War I, 1890-1920

    Week 5 (   ) The Constitution; Building an Empire
    Readings: AP Ch. 29
    Assignments: Review the Constitution and questions previously completed (see week 1) and bring to class
- EXAM 1

    Week 6 (   ) Building an Empire; Progressivism
    Readings: AP Ch.30, 31; SOURCE Ch.5 (read for Structured Controversy); SOURCE Ch. 6 (Docs. 1, 3)*
    Assignments: SOURCE Ch.6 "Reasoning about History" Docs. 1, 3.

    Week 7 (   ) Progressivism, Phase II; War in Europe
    Readings: AP Ch. 32; SOURCE Ch. 5 and material on reserve in the library – for Structured Controversy;
    Assignments: STRUCTURED CONTROVERSY: Should the United States become an empire by keeping
        the Philippine Islands (1899)?

    Week 8 (   ) World War I
    Readings: SOURCE Ch. 7 (Docs. 2, 3)*; SOURCE Ch. 8 (select several posters for analysis)*
    Assignments: Cause/Effect handout on World War I; SOURCE Ch. 7 "Reasoning about History" Docs.2, 3
- Group ESSAY from structured controversy DUE
- MAP/DATE QUIZ 2

LAST DAY TO WITHDRAW: February 26

Appendix H. (Continued).

III. Between the Wars and World War II, 1920-1952

       Week 9 (   ) Life in the Twenties, Affluence and Anxiety
       Readings: AS Ch.33,34
- EXAM 2

       Week 10 (   ) The Great Depression and The New Deal
       Readings: AS Ch.35, 36; SOURCE Ch.9 (entire chapter)*; SOURCE Ch. 10 (Docs. 1, 4, 6 [poem "Let
             America be America Again"]*
       Assignments: SOURCE 9 "Reasoning about History" Docs. 1, 3; SOURCE 10 "Reasoning about History"
             Doc. 1 (one letter), 4.

       Week 11 (   ) America and World War II
       Readings: AS Ch.37
       Assignments: Cause/Effect worksheet: World War II
- ESSAY DUE
- MAP/DATE QUIZ 3

<div align="center">SPRING BREAK March 23-27</div>

       Week 12 (   ) The Cold War begins
       Readings: AS Ch.38; SOURCE Ch.12 (skim only – know what "containment" policy means)
- EXAM 3

IV. The United States in the Global Age, 1946 to present

       Week 13 (   ) Affluence, Conservatism, and Civil Rights
       Readings: AS Ch.39, 40; SOURCE Ch.12 (Docs. 2, 3)*; SOURCE Ch. 13 (Docs. 1, 3, 5 [*Chicago Daily
             News*, pp. 320-21; Charleston *Post*, p. 323-24; Racine *Journal-Times*, pp. 325-26; Charlotte
             Observer, pp. 326-27]*
       Assignment: SOURCE Ch. 12 "Reasoning about History" Doc. 2; SOURCE Ch.13 "Reasoning about
             History" Doc. 3, 5 (one assigned letter); Cause/Effect worksheet: The Civil Rights Act of 1964
             Civilization Summary Worksheet: America in the 1990s (in class)

       Week 14 (   ) Domestic Division and World Politics, Resurgence of Conservatism
       Readings: AS Ch.41,42,43; SOURCE Ch.14 (Docs. 1, 2)*
       Assignments: SOURCE Ch. 14 "Reasoning about History" Docs. 1, 2
- Optional ESSAY DUE
- MAP/DATE QUIZ 4

       Week 15 (   ): Current Issues; Review for final; Post-testing
       Assignment: AS Ch.43
- EXAM 4

FINAL EXAM:

* While your written assignment and class discussions will center around the documents I have listed,
it is to your advantage to read the entire source chapter, including the introduction and all documents. Answering the
questions at the end of each chapter would also be helpful to you, although not required.

Appendix H. (Continued).

COURSE OUTLINE B (tentative)
U.S. History 1877 -Today

You should complete all readings (text and other assignments) by the beginning of the week under which they appear on this syllabus unless otherwise instructed**. Be prepared to contribute.**

AP = Kennedy, Bailey, and Piehl The Brief American Pageant;
SOURCE = Constructing the American Past: A Source Book of a People's History

I. Industrialization and Urbanization, 1865-1900
Week 1 (   ) Introduction; Overview of U.S. History; Reconstruction; Pre-testing
Readings: AP Chapter 24
Assignments: the Constitution (AP Appendix pp. vi-xxiv)- Skim, read selections, note organization, and
answer assigned questions (keep for later).

Week 2 (   ) Pre-testing; Reconstruction, continued; Gilded Age
Readings: AP Ch.25, 26; SOURCE Introduction and Chapter 1 (Docs. 1, 2, 3)*
Assignments: SOURCE questions p.22 (These assignments will be discussed each week)

Week 3 (   ) Industrialization; Immigration and Urbanization; Daily Life and Popular Culture
Readings: AP Chapter 27; "Makers of America": The Chinese (p.344), The Poles (p.368), The Italians
(p.378), The Puerto Ricans (p.424); SOURCE Ch. 2 (Docs. 1, 2, 3)*; SOURCE Ch. 4 (entire)*
Assignments: SOURCE Ch.2; questions p.42, 43

Week 4 (   ) The Great West and the Agricultural Revolt; Populism
Readings: AP Ch.28; SOURCE Ch.3 (Docs.1, 2 [first two letters], 4, 9)*
Assignments: SOURCE Ch.3 questions p. 71; Civilization Summary Worksheet: America in the 1890s (in
class)
- MAP/DATE QUIZ 1

II.   World Power, Progressivism, and World War I, 1890-1920

Week 5 (   ) The Constitution; Building an Empire
Readings: AP Ch. 29
Assignments: Review the Constitution and questions previously completed (see week 1)and bring to class
- EXAM 1

Week 6 (   ) Building an Empire; Progressivism
Readings: AP Ch.30, 31; SOURCE Ch.5 (read for Structured Controversy); SOURCE Ch. 6 (Docs. 1, 3)*
Assignments: SOURCE Ch.6 questions p. 154

Week 7 (   ) Progressivism, Phase II; War in Europe
Readings: AP Ch. 32; SOURCE Ch. 5 and material on reserve in the library – for Structured Controversy;
Assignments: STRUCTURED CONTROVERSY: Should the United States become an empire by keeping
the Philippine Islands (1899)?

Week 8 (   ) World War I
Readings: SOURCE Ch. 7 (Docs. 2, 3)*; SOURCE Ch. 8 (select several posters for analysis)*
Assignments: Cause/Effect worksheet on World War I; SOURCE Ch. 7 questions p. 180
- Group ESSAY from structured controversy DUE
- MAP/DATE QUIZ 2

LAST DAY TO WITHDRAW: February 26

Appendix H. (Continued).

III. Between the Wars and World War II, 1920-1952

> Week 9 (   ) Life in the Twenties, Affluence and Anxiety
> Readings: AS Ch.33, 34

- EXAM 2

> Week 10 (   ) The Great Depression and The New Deal
> Readings: AS Ch.35, 36; SOURCE Ch.9 (entire chapter)*; SOURCE Ch. 10 (Docs. 1, 4, 6 [poem "Let
>   America be America Again"]*
> Assignments: SOURCE 9 questions p.221; SOURCE 10 questions p. 251

> Week 11 (   ) America and World War II
> Readings: AS Ch.37
> Assignments: Cause/Effect worksheet: World War II

- ESSAY DUE
- MAP/DATE QUIZ 3

<div align="center">SPRING BREAK - March 23-27</div>

> Week 12 (   ) The Cold War begins
> Readings: AS Ch.38; SOURCE Ch.12 (skim only – know what "containment" policy means)

- EXAM 3

IV. The United States in the Global Age, 1946 to present

> Week 13 (   ) Affluence, Conservatism, and Civil Rights
> Readings: AS Ch.39, 40; SOURCE Ch.12 (Docs. 2, 3)*; SOURCE Ch. 13 (Docs. 1, 3, 5 [*Chicago Daily
>   News*, pp. 320-21; Charleston *Post*, p. 323-24; Racine *Journal-Times*, pp. 325-26; Charlotte
>   *Observer*, pp. 326-27]*
> Assignment: SOURCE Ch. 12 questions p.302; SOURCE Ch.13; questions p.337
>   Cause/Effect worksheet: The Civil Rights Act of 1964
>   Civilization Summary Worksheet: America in the 1990s (in class)

> Week 14 (   ) Domestic Division and World Politics, Resurgence of Conservatism
> Readings: AS Ch.41, 42, 43; SOURCE Ch.14 (Docs. 1, 2)*
> Assignments: SOURCE Ch. 14 questions p.376

- Optional ESSAY DUE
- MAP/DATE QUIZ 4

> Week 15 (   ): Current Issues; Review for final; Post-testing
> Assignment: AS Ch.43

- EXAM 4

FINAL EXAM:

* While your written assignment and class discussions will center around the documents I have listed,
it is to your advantage to read the entire source chapter, including the introduction and all documents.

Appendix I

Sample Questions from <u>Constructing the American Past</u> (Vol.2)

Appendix I. (Continued).

VITA

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Jennifer H. Reed received her B. A. Cum Laude in Russian Language and Literature from Vanderbilt University in 1970. She completed requirements for secondary teaching certification in Russian and French from George Peabody College for teachers in 1971. Her master's degree was granted from the University in 1991 in Early Modern European History, with a thesis entitled "Dutch Anabaptist Female Martyrs and their Response to the Reformation." While a graduate student, she was awarded three university fellowships.

Over the past 25 years, Ms. Reed has worked as an educator in a variety of settings including private non-profit educational organizations and the public school system. Currently, Ms. Reed is an Instructor in Education and History at Polk Community College. She has developed and taught history survey and education courses, published in *The History Teacher*, and presented at international conferences. She also presents inservice workshops in teaching for critical thinking for instructors at all grade levels. Her current research interests include teacher professional development and integration of critical thinking into course design.