THE EFFECTS OF AN INQUIRY-BASED AMERICAN HISTORY PROGRAM ON THE

ACHIEVEMENT OF MIDDLE SCHOOL AND HIGH SCHOOL STUDENTS

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Implicit in the call for educational reform in the teaching of social studies has been the suggestion that pursuing inquiry-based principles will lead to improvement in student achievement. The purpose of this study was to compare the effectiveness of two types of pedagogy: traditional and inquiry-based upon student achievement as measured by a standards-based, state administered examination. Second, this study examined the relationship between the treatment teachers' level of implementation and student achievement.

A nonequivalent control group posttest and experimental design was used in this study. Subjects involved in this study include 84 secondary American history teachers and their respective students from a large urban public school district in Texas. The sample consisted of two groups, one taught by traditional/didactic instruction ($n=48$) and the other taught by inquiry-based pedagogy ($n=36$). Data for this study were collected using a classroom observation protocol based upon the level of use rubric developed by the concerns-based adoption model. An analysis of variance (ANOVA) ($p<.05$) was used to measure the effects of inquiry-based instruction and traditional pedagogy on student achievement. Student achievement results were measured by the Texas Assessment of Knowledge and Skills (TAKS) for American history, grades 8 and 11.

The study found that mean scores of the Grade 8 *History Alive!* group were significantly higher than the scores of the control group, but not for the Grade 11 *History Alive!* group. However, a comparison of mean scores by teachers' level-of-use suggested that the more faithful the teacher in designing standards-based lessons and delivering them through inquiry, the greater retention of American history student's knowledge about the subject.

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CHAPTER I

INTRODUCTION

The chief criticism of current social studies teaching is that it is concerned almost exclusively with the accumulation of descriptive facts which are obsolescent, are not readily attained, and if attained, are retained for only a short period. (Gross, 1977; Banks, 1990). Traditionally, teachers have believed that their role was to disaggregate knowledge into discrete courses, topics, and units and deliver instruction through a study of the major events and historical figures who shaped a culture presented as a time line of well defined eras (Armbuster and Anderson, 1984). Other scholars (Newmann, 1990a; Wineburg, 2001) look toward a stronger emphasis in the development of critical and autonomous thinking, on discovery learning and methods of inquiry as effective methods to enhance understanding of our complex social environment. Scholarship on the teaching of social studies reflects a recurrent demand for a more interpretive pedagogical approach – one that involves students "doing" history by weighing and interpreting evidence to construct a story of the past.

Since the early 1960s, studies of thinking have been undertaken which promise to revolutionize the concept of thinking as well as the way of teaching thinking (Taba, 1962; Marzano, Pickering and Pollock, 2001).   Recent developments in history, psychology, and sociology have provided educators with a different understanding of how knowledge is acquired and retained. For the individual learner, meaningful understanding is seen as a cognitive process of making sense of the individual's new experience in relation to the individual's already constructed knowledge. This is particularly true in the teaching of social studies since a primary outcome of instruction in the United States is to enable students to actively participate in a democratic society (Wineburg, 2001).

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Recent scholarship in the field of social studies education suggests that inquiry-based pedagogy will lead to an improvement in student achievement (Newmann, Marks, Gamoran, 1996). In the past 15 years, an increasing amount of literature on social studies education has discussed the role of inquiry-based instruction and learning in facilitating student understanding in social studies. (Wiggins and McTighe, 1998; Erickson, 1998; Wineburg, 2001). Engaging students in historical inquiry is aggressively promoted by leading education organizations. The Association of Supervision and Curriculum Development (ASCD), one of the largest organizations of professional educators in the United States, promotes this work thorough the publication of research-based curriculum frameworks and instructional designs. Grant Wiggins and Jay McTighe's *Understanding by Design Model* (1998) helps teachers design a series of inquiry-centered lessons based upon essential questions and enduring understandings. Marzano, Pickering, and Pollock's meta-analysis *Classroom Instruction that Works* (2001) guides teachers to select instructional practices that focus on student-centered, critical thinking behaviors. Heidi Hayes Jacob's *Curriculum Mapping* (2004) advocates for integrated instruction through student investigations and performance assessments. Carol Ann Tomlinson's *Differentiated Instruction* (2001) encourages teachers to adopt instructional practices that meet each student's need for social interaction, meaningful inquiry and an array of opportunities to demonstrate understanding.

However, despite repeated calls by researchers and educators for investigations into the effects of implementing instructional practices consistent with inquiry-based theory, little empirical research has been completed. Marzano, Pickering, and Pollock's meta-analysis on effective instructional pedagogy serves as the most comprehensive study to date. Yet their determination of the nine "best instructional practices" is based on achievement studies that pre-

date the standards-based movement and its subsequent high-stakes accountability corollary. Though this synthesis provides educators with the beginnings of a sound research base, there are several questions unanswered by the current field of educational research. Are some instructional strategies more effective in certain disciplines? Are some instructional strategies more effective at certain grade levels and with students from different backgrounds? Are some instructional strategies more effective at producing high student achievement results on standards-based state assessments? (Marzano, Pickering, and Pollock, 2001). Clearly then, for inquiry-based learning to gain validity as a theory that impacts learning, comprehensive, school-based investigations on the effects of pedagogy informed by inquiry-based practices are now needed.

The purpose of this study was to determine the effects of inquiry-based instruction on student understanding of American history. The study compared the effect of an inquiry-based American history program to a more didactic teaching associated with traditional pedagogy. Differences in student achievement were measured by a standards-based, state-wide required posttest.

Traditional Pedagogy

The traditional secondary history teacher uses predominantly lecture-oriented instruction, incorporating question-and-answer recitation and teacher-led discussions that have predetermined outcomes with one right answer (Downey and Levstik, 1988). Students involved in this type of classroom environment are involved in transmission learning (Gross, 1977). Traditional history pedagogy is characterized by lessons that are teacher-centered (Gross, 1977). The teacher determines instructional activities (Downey and Levstik, 1988). In the traditional

classroom there is little student dialogue except for occasional recitative questioning, and assessment is limited to pencil and paper tests. (Goodlad, 1984).

The most extensive research study on the teaching of history is the *Report of the 1977 National Survey of Science, Mathematics, and Social Studies Education*. (Weis, 1978) According to the report, at grades 10-12, where American history is traditionally taught, the teaching methods most commonly used were class discussions, lectures, and periodic tests and quizzes. Weis reported that the dominant paradigm of secondary history teachers is equated with transmitting information to students. The learning is characterized as the acquisition of information through memorization, and the assessment of learning is described as summative. This paradigm is so commonly practiced in secondary history classes that other delivery methods are of little or no influence. (Weis, 1978)

Inquiry-based Pedagogy

In contrast, teachers who deliver pedagogy informed by an inquiry model develop lessons that engage students with interactive problem-solving processes that develop student understanding of enduring historical generalizations (Taba and Freeman, 1964). Inquiry-based instruction is founded on the premise that history as a discipline and as a course demands meaning over memory (Taba, 1967). Just as historians work to give meaning to historical facts, students must work together to give meaning to their historical experiences (Wineburg, 2001). This widely proposed alternative to lecture and textbook centered pedagogy is active learning, engaging students in the "authentic" task of the historical inquiry. (Bain, 2000).

Inquiry-minded teachers design lessons that involve students in hands-on learning and cooperative response groups in which students have the responsibility for making decisions and reaching interpretations through analysis of historical records and artifacts (Bruner, 1966). In the

inquiry-based model, discussions are predominantly student initiated and based on the student's desire to question and learn about content. Students reach interpretive conclusions among themselves as well as with the teacher (Zemelman, Daniels, and Hyde, 1998). Inquiry-based instruction relies on authentic assessment to evaluate student progress and tends not to evaluate student learning based solely on pencil and paper tests. (Bruner, 1966).

Theoretical Framework

The central idea of inquiry learning is based on the assumption that children are intrigued and motivated to learn by a mystery and that each school subject represents a discipline of inquiry in which all students can participate. (Bruner, 1966). Any subject lends itself to inquiry; all that is required is a puzzling situation for which the students, given adequate clues, and a process for inquiry and time, can find a logical solution (Bruner, 1985). In American history, the political, economic, and social issues are already organized by major problems, the historical figures engaged in its debate, conflict and major resolution.

Too often children are taught in school as though the answers to all important questions were in their textbooks (Armbuster and Anderson, 1984). In American history, the textbook presents the development of our nation as a series of critical questions and resolutions that naturally occurred with little doubt that outcomes of major revolutions and events could have taken a different turn. In reality, most historical and contemporary issues have no easy answers. Jerome Bruner (1966) argues that those who succeed in life are usually those who are willing to ask questions and search for solutions.

Robert Sternberg (1985) argues that the problems presented by life's circumstances and those that children are taught to deal with in school are significantly different. Therefore, in order to prepare students to solve everyday problems, they must be comfortable and skilled at

defining issues, locating relevant information, deliberating with others, tolerating ambiguity, and realizing that problems can persist. Richard Suchman's inquiry model (1962), first applied in elementary science, has become a standard process for engaging learners across disciplines and grade levels. Today, the National Science Education Standards on Scientific Inquiry (2000) promote the same process.

The inquiry model can be defined through a series of seven steps (Suchman, 1962; Olson and Loucks-Horsley, 2000).

1. Select a problem and conduct research: the teacher chooses a puzzling event that will entice students to discover the answer and then research the problem for possible solutions.

2. Introduce the process and present the problem: the teacher explains the procedures for student discovery and provides them the means for recording and analyzing data.

3. Gather data: the teacher guides the students to ask questions and encourages them to deliberate in teams.

4. Develop a theory and verify: the students accept and reject theories explaining the phenomenon. Students consider causation and apply historical perspectives (political, economic, social) to conditions that may have caused the event.

5. Explain the theory and state the rules associated with it: once a theory or answers have been created by the students, the teacher leads them to understand how the problem was resolved and verifies student theories that support the historical actions.

6. Analyze the process: the teacher helps the class reflect on the process of sorting and weighing information to develop a theory or explanation. As the class gains confidence in the inquiry process, students may assume the responsibility of leading debriefings.

7. Evaluate: the teacher will determine if students have understood the theory by assessing their ability to generalize the rules to other situations.

In an inquiry-based classroom, the role of the teacher is to organize information around conceptual problems, enduring historical dilemmas, and discrepant situations in order to engage the student's interest (Bruner, 1962). Ideas are presented holistically as broad concepts and then broken down into parts. Activities are student-centered with collaborative deliberation, theory development, and encouragement to find information (Bruner, 1962)

To bring history alive in the inquiry-based classroom, concepts essential to the study of American history (e.g. democracy, free-enterprise, manifest destiny) must frame the lessons. Curriculum is presented holistically, organized into "big ideas" (Bruner, 1966). This instructional approach entices students to build meaningful knowledge by breaking up wholes into parts that they can understand (Bruner, 1965). Assessment of student understanding is embedded within the activities. In traditional education, teachers assess students by grading assignments such as worksheets and tests. In contrast, an inquiry-based teacher assesses student learning while he teaches to gain insight into students' understanding as well as their cognitive development. (Bruner, 1966) Although correct and incorrect answers are important, the greater importance is the insight into students' current understanding and the opportunity for them to become self-aware of their ability to construct meaning.

Research Study

Purpose. The purpose of this quasi-experimental study was to determine the effects of inquiry-based pedagogy on student understanding of American history standards. The findings of this study systematically compared the achievement of students taught with the *History Alive! ®* American history program (Teachers' Curriculum Institute, Palo Alto, CA, www.teachtci.com). with students taught by a more didactic, traditional pedagogy supported by the adopted American history textbook and its ancillary materials and the lectures, question-and-answer recitations, quizzes that it advocates.

The independent variable was pedagogy, either a traditional approach or pedagogy informed by an inquiry-based model. The dependent variable was defined as student achievement of American history content, concepts, and skills as measured by scores on the Texas Assessment of Knowledge and Skills at grades 8 and 11.

Research Questions

This study brings together the question of how to increase student achievement by adjusting pedagogy to reflect the principles of inquiry-based instruction. The research questions that arise from the literature are listed below along with their null hypotheses.

Research question one. Is there a causal relationship between inquiry-based pedagogy in American history teachers classes at grades 8 and 11 and increased student achievement as measured by scores on the Texas Assessment of Knowledge and Skills for American history, grades 8 and 11?

Null hypothesis: there is no statistically significant difference in the mean scores of students receiving inquiry-based instruction and students receiving traditional American history instruction.

Research question two. Is there a significant difference in the achievement of students in the *History Alive!* program according to the teachers' level-of-implementation?

Null hypothesis: There is no statistically significant difference in the mean scores of students exposed to inquiry-based instruction according teacher level of implementation.

Educational Significance of the Study

Robert Bain's (2000) research on the teaching and learning of history suggests that the achievement effects of inquiry-based learning as measured by standardized assessments are inconclusive. Previous studies have measured student outcomes using norm-referenced measures (Marzano, Pickering and Pollock, 2001). Marzano, Pickering and Pollock's meta-analysis of effective instructional practices are based upon experimental and quasi-experimental research in the United States during the past twenty years. Student achievement outcomes in these studies were measured predominantly by norm-referenced assessments. Those studies relying on criterion-referenced measurements predate the current standards-based, high-stakes accountability era ushered into public education in the United States by the Elementary and Secondary Education Act of 2001, commonly referred to as the "No Child Left Behind" Act.

Missing from the literature are studies that measure the effects of inquiry-based learning on mastering a standards-based curriculum (Marzano, Pickering, and Pollock, 2001). Schools have continued to utilize the same traditional instructional methodologies despite the adoption of a standards-based, high-stakes accountability system.

The significance of the study is two-fold:

1) to evaluate the effectiveness of the instructional model on the cohort participants -- both teachers and students and

2) to use findings to decide whether or not to expand the instructional model across the district.

Definition of Terms

For the purpose of this study, the following words are defined:

American history. A general introductory course in regular education classes at grades 8 and 11 that fulfills the Texas state requirement for graduation. The Grade 8 course is defined as a study of American politics, economics, and cultures from the period of colonization in 1607 through the end of Reconstruction in 1877. The Grade 11 course continues the study by reviewing the American Revolution and Constitutional periods (1760-1791) and the Civil War (1861-1865) before concentrating on the events from the Gilded Age (1880s) through the Vietnam Era and Watergate (1973).

History Alive! Program. The American history professional development program and materials that are based upon the inquiry-based pedagogy model of Jerome Bruner and Howard Gardner.

Inquiry-based instruction. Pedagogy that consistently involves student learning through multiple intelligences, cooperative interaction among students given a problem or dilemma to resolve, and a focus on essential concept and historical understandings that spiral throughout the curriculum.

Level of implementation. Refers to the degree to which teachers exposed to the *History Alive!* program are using the strategies and materials as prescribed in the district's scope and sequence document for History Alive!. The *History Alive!* teacher's level of implementation is categorized as either Orientation Level, Mechanical Use Level or Routine Level. The level of implementation is determined by multiple classroom observations using a rubric designed from

the Level-of-Use instrument developed in Hall and Hord's *Concerns-Based Adoption Model* (1989).

Standards-based curriculum. A set of documents defining the scope and sequence of teaching American history. The standards for each American history course are based upon the *Texas Essential Knowledge and Skills* and each standard is further clarified for teachers with essential vocabulary, recommended teaching strategies, and formative assessment options.

Texas Assessment of Knowledge and Skills (TAKS). A series of state assessments covering reading, mathematics, writing, science and social studies at grades 3 through 11. This study will use the Grade 8 and Grade 11 TAKS exams of American history given to students at the end of each course. The grade 8 test consists of 48 multiple choice items; the grade 11 test includes 55 questions. All items are aligned with one of the learning objectives of the Texas Essential Knowledge and Skills.

Texas Essential Knowledge and Skills (TEKS). The state curriculum objectives EC-12 for each subject matter in the state of Texas. This study will address the TEKS for American history that delineate the content, concepts and critical thinking expectations at grades 8 and 11. The American history curriculum is divided into eight strands: history, geography, economics, government, culture, citizenship, science and technology and critical thinking skills. Within each strand are student expectations that define in particular what students must know and be able to do by the end of each course.

Traditional classroom instruction. Instruction that involves lengthy lectures, directed demonstrations and student independent practice using worksheets. Students are involved in didactic learning where the teacher is the dispenser of knowledge and the activities and lessons are decided upon by teacher with heavy dependence upon the textbook. Student opinions and

deliberation with peers are not valued and the assessment of student progress is often limited to paper and pencil testing. (Taba, 1962).

Delimitations of the Study

The following statements identify the delimitations of this study.

1. Classroom observations conducted three times during the academic year (once in the fall and twice in the spring) determined the level of teacher implementation. It is possible that the teachers' observed level of implementation during the three classroom visits did not reflect the daily practices of teaching American history.

2. The assessment scores were derived from a traditional paper and pencil test (TAKS). The type of measurement for determining student achievement was an objective paper and pencil test, which favors students taught with a more didactic approach.

3. The Grade 8 TAKS examination assesses the same corpus of curriculum standards that will be taught through the *History Alive!* program. However, the Grade 11 TAKS exam assesses content and skills representing World History and World Geography. A comprehensive assessment of social studies instruction across grades 8 through 11, approximately one-third of the Grade 11 exam assesses non-American history content. The grade 11 results will be affected by the non-American history content questions.

Organization of the Study

Chapter 1 presents the introduction for the study, its theoretical framework and purpose. The research questions that drive the project and the educational significance are presented. This chapter also defines the terms of the study and lists its delimitations. A review of the literature concerning the development of inquiry-based instruction, classroom indicators of inquiry-based

learning, and the *History Alive!* learning environment comprise Chapter II. Chapter III describes

the research design, purpose, hypotheses, subjects, sampling, variables, instrumentation,

experimental design, procedure, statistical analysis and validity issues. Chapter IV presents the

data related to each research question and Chapter V summarizes the results, discusses the

implications, draws conclusions and offers recommendations for further study.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this quasi-experimental study was to determine the effects of inquiry-based instruction on student understanding of American history content standards. This chapter reviews the literature pertaining to the historical development of inquiry-based methodologies and outlines the current features of an inquiry-based instructional model for the teaching of American history. First, the definition of inquiry-based instructional models is examined in light of the development of constructivist theory on cognition. The development of classroom thoughtfulness indicators is presented to further define the teacher behaviors that support a cooperative, inquisitive classroom environment. Current research on high-yield instructional practices and their alignment with the inquiry-based model is discussed and finally, the instructional components of the *History Alive!*® American history program (Teachers' Curriculum Institute, Palo Alto, CA, www.teachtci.com) are examined in congruence with the theoretical framework of inquiry-based instruction.

What is Inquiry-based Instruction?

There is need to examine what the phrase "inquiry-based instruction" has come to mean. Meanings of the phrase are closely linked with the work of Jerome Bruner (1961), Lev Vygotsky (1962), and Hilda Taba (1962). Inquiry-based instruction can be associated with two interconnected domains. First, the inquiry model is used to identify a position within the domain of epistemology. Second, inquiry-based pedagogy is also viewed as an instructional theory and prescribes a form of pedagogy. This review of literature concentrates on the second domain of inquiry-based pedagogy, tracing the development of theory into classroom application.

In the teaching of social studies, perhaps more than any other discipline, the use of good inquiry techniques is vital since learner outcomes are dependent on developing a critical, inquiring mind. (Parker, 1991). Two well-developed models of instructional programming are particularly relevant for teaching social studies: Jerome Bruner's *Man: A Course of Study* (1965). and Hilda Taba's *Teaching Strategies* (Taba and Freeman, 1964). These models were developed for general social studies classroom use and offer unique opportunities to engage all students in high level conceptual learning and in developing skills of inquiry, research, writing, discussion, and project synthesis.

Jerome Bruner

Bruner's (1960) teaching-learning model, the basic structure of a discipline, is not actually a framework, but a way of approaching the development of a framework for teaching history. Bruner developed an innovative curriculum called *Man: A Course of Study* (1965) which exposed students to the ideas and methods of scholars working in a discipline. Bruner stressed that children should be active inquirers, emulating the search for understanding exhibited by scholars. Through such experiences, students move to increased levels of investigation in a field following a spiral curriculum of increasing complex concepts and historical generalizations that constitute the structure of history. Bruner's notion that students learn best when they act as real inquirers has influenced many instructional models in the education, including Hilda Taba's *Teaching Strategies* (Taba and Freeman, 1964) and the *History Alive!* program (Bower and Lobdell, 2004).

Bruner's structure of the discipline model (1960) developed from the 1959 Woods Hole Conference on education in science, sponsored by the National Academy of Sciences (Maker and Nielson, 1995). Directed by Bruner, the conference report, published as *The Process of*

Education (1960), discusses five important areas of education. The first component, the

importance of structure, argued that the aim in education should be to teach the basic structure of

academic disciplines in such a way that this structure could be understood by children. This

basic structure consists of certain concepts (for example revolution in history, supply and

demand in economics, and cultural diffusion in geography) and the important relationships

between them. In addition to basic concepts, themes and theories, each discipline has

characteristic patterns of inquiry or strategies for research and information management. Table 1

illustrates key generalizations from the content strands in American history.

Table 1

Key American History Generalizations

Discipline	Generalizations
History	Wherever human beings have lived, conflicts between individuals, groups, and nations have arisen. A historian's view of the past is influenced by the availability of evidence, his or her personal bias, purposes for writing, and the society and times in which he or she lives and writes.
Geography	The physical environment influences how a culture develops and how it solves its problems for survival. An individual's perception of his or her physical environment is influenced by his or her culture and experiences within that environment.
Politics	In every society and institution, regulations and laws emerge to govern the behavior of individuals and groups. Rules and laws reflect the basic values within a society or institution.
Economics	Every individual and society face a conflict between unlimited wants and limited resources. All members of society are interdependent. Individual producers of goods and services exchange with others to get the goods and services they need to satisfy their basic wants.

(Banks, 1990)

"Most of Bruner's ideas follow from this basic conviction: A person approximates an inquirer if the basic ideas of that disciple are understood and are of concern; if concepts are revisited as understanding increases; if a balance is established between a learner's intuition and analysis; and if a long-term commitment to intellectual activity and the pursuit of knowledge is clear" (Maker and Nielson, 1995, p.94)

Understanding the basic structure means that an individual not only has learned a specific thing but also has learned a model for understanding similar things that may be encountered again. A historical event or phenomenon is recognized as a specific instance of a more general case. Carefully developed understanding should permit the student to recognize the limits of applicability of the generalization (Bruner, 1966).

Students reach historical understanding when they can demonstrate (Bruner, 1966):

1. The ability to understand present events in light of the past.

2. The ability to sift through the documentary record and construct a straightforward and probable account of what happened.

3. Reflective and discriminating replies to "thought questions" on a given historical situation.

4. The ability to answer factual questions about historical personalities and events.

Using an inquiry model to teach history effectively makes several assumptions (Banks, 1990). The first assumption is that the primary purpose of learning is to inform the future; whatever people learn should allow them to go further more easily. Learning serves people in the future through both specific and general transfer. By learning underlying ideas, the student can master more of the subject, more quickly, and since educators have little time and much to teach, these basic ideas will go much further (Bransford, Brown, and Cocking, 2000).

Related to this idea is the belief that memory is facilitated if a structure is learned. Bruner (1960) states that research on memory has shown that unless details are placed in a structured pattern, they are forgotten easily. Once the structure is learned, facts and details can be remembered more easily or reconstructed if necessary.

Bruner's emphasis on putting the learner in the role of a scholar or inquirer requires teachers to present lessons that develop higher levels of thinking and encourage discovery and open-endedness. When children behave as scholars they will use, rather than simply acquire, information. Information learned will be applied in practical situations and be used to form new products or reach more mature decisions. Information, he argues, transforms to understanding upon social interaction and practical application.

Discovery is an integral part of Bruner's approach (1966) to teaching and learning. He suggests that there are three important aspects involved in implementing a guided inquiry-based classroom.

(a) organization and selection of data to be used in facilitating the child's discovery of some basic ideas,

(b) the use of questions for activities that will guide students in the process of inquiry, and

(c) ways of teaching that will translate into an inquiry attitude.

Although Bruner does not directly address the question of what kind of learning environment a teacher should establish, for students to function as real inquirers, the focus must be on student ideas and learning activities. Teacher talk must not dominate the classroom. The environment must permit a high degree of mobility to enable students to carry out their investigations.

The major disadvantage in using Bruner's approach is that history teachers carry a large burden for designing quality instruction (Maker and Nielson, 1995). They not only must keep up on the latest developments in their field but also must be knowledgeable enough in the methods of inquiry to be able to give children assistance in their investigations. To teach high-level concepts adequately, the teacher must understand them well. Many teachers are not knowledgeable enough about their academic areas because the basis of their pre-service and in-service training has focused on strategies at the expense of developing strong conceptual understanding of a discipline. (Ravitch, 1998). For American history teachers, the *History Alive!* program has built a bridge linking Bruner's *Structure of the Discipline* (1960), spiraled curriculum and inquiry-based methodology with quality American history units based upon state standards and a professional development program designed to tool teachers with specific strategies to implement an inquiry-based learning environment.

Hilda Taba

Hilda Taba's identification of effective instructional strategies define what an inquiry-based teacher and learner do. The *History Alive!* program developed by synthesizing Bruner's *Structure of the Discipline* (1960) and Taba's techniques for establishing an inquiry-based classroom. Taba, in the development of both her theory on curriculum development (1962) and her *Teaching Strategies* program (Taba and Freeman, 1964), draws heavily upon the concept of teaching the basic structure of a discipline as a way to organize and present the content to be taught. Teaching the "thought systems" of the various disciplines, an idea attributed to Bruner, also influenced Taba.

With the use of Taba's techniques, however, the history teacher would be certain of the systematic development of higher levels of thinking, the use of open-ended questions, and the

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use of questions calling for explanations of reasoning and logic. Taba adds class discussions as

methods of guided debriefing exercises so that teachers can monitor understanding and adjust the

pacing of instruction. Table 2 synthesizes the common behavior traits recommended among

students and teachers in both Hilda Taba and Jerome Bruner's inquiry-based instruction models.

Table 2

Summary of Teacher and Student Roles in Bruner's Structure of the Discipline
and Taba's Instructional Strategies

Type of Thinking	Student		Teacher	
	Role	Sample Activities	Role	Sample Activities
Basic Concepts	Inquirer Data gatherer Analyzer Synthesizer	Using primary sources, study an event by collecting raw data. Using a secondary source, study the conclusions or ideas of others about some historical phenomenon.	Organizer Facilitator Consultant Resource	Choose concepts identified as most important by historians. Subject each concept to be taught to the tests of usefulness to an adult. Select the data and plan learning experiences that are rich in developing concepts and basic ideas.
Inquiry as a Scholar	Inquirer Data gatherer Analyzer Synthesizer	Be a professional historian.	Organizer Facilitator Consultant Resource	Provide students constructive feedback on their inquiry skills. Provide students with feedback on the validity of their conclusions and logic in reaching them.
Discovery	Inquirer	Try to figure things out; make sense of information, observations, and data. Make hypotheses to test them.	Organizer Facilitator Consultant Stimulator	Organize content and plan learning experiences that will facilitate students' discovery of basic concepts. Provide a balance between inductive and deductive approaches.

Adapted from Maker and Nielson, 1995

The Hilda Taba Teaching Strategies (Taba and Freeman, 1964) are structured generic methods in which teachers lead students through a series of sequential tasks by asking them open-ended, but focused questions. Four strategies were developed:

(a) Concept development: in which students classify data and support their classifications. Concepts are formed, clarified, and extended as students respond to questions that require them to notice similarities and differences that form a basis for grouping items, labeling groups in different ways, regrouping items in different ways and giving reasons for all groupings. During these activities the teacher must be able to ask clarifying questions at the appropriate time and recognize when to use other tactics to extend, refocus or support a discussion that will foster conceptual attainment.

(b) Interpretation of data: in which students gather information and make inferences about it. Based on guided class discussions, students draw cause-effect relationships and defend the contentions they make. A critical element of this strategy is that students have meanings for their interpretations and that they recognize the significance of this data upon events in the past, present and future. Teachers must be able to help students recognize the problematic nature of drawing conclusions from limited information and they must help students reach these conclusions on their own. Teachers must also be able to guide a discussion by using appropriate questioning techniques.

(c) Application of generalizations: involves students using generalizations to explain unfamiliar events and to make predictions about what would happen in hypothetical or proposed situations. The real test of a concept or generalization comes when it is

applied in a real-life situation. (Taba, 1964). Students must support all predictions and inferences made. Again, teachers must use appropriate questioning strategies that will lead children through the application tasks.

(d) Resolution of conflicts: helps students deal more rationally with situations encountered in life by giving them practice in exploring feelings, attitudes, and values behind people's behavior. Students are encouraged to take viewpoints of all individuals involved in the conflict and discuss what each individual can do to resolve the conflict situation. Based on the discussion, students evaluate their options and make independent judgments about the most appropriate action that should be taken. After explaining the judgment and considering long-term consequences, students are asked to consider a similar situation experience by a member of their own group.

Taba's inquiry-based strategies were intentionally conceived upon the premise that "all school children are capable of thinking at abstract levels, although the quality of individual thinking differs markedly" (Institute for Staff Development, 1971, p. 148).

Her research shows that when students receive instruction based upon her model, students with low IQs gained as much as did those with high IQs. To assess the effectiveness of the teaching strategies (Taba, 1964), an objective test, *The Social Studies Inference Test*, was given to students at the end of the course. By this measure, students were presented with a series of stories followed by a list of inferences about the story. Students read the story and the statements and decided whether each statement was probably true or probably false. Scores tabulated the dimensions of inference, overgeneralization, and discrimination.

Test scores were correlated with student participation during the year. Tapes of classroom discussions were coded by level of thought for each student. To analyze interaction

patterns, several measures were obtained for each child. Children were classified as either high or low participators in the inquiry-based classroom. Children's participation in the discussions was compared to their performance on *The Social Studies Inference Test* and with other variables assessed (IQ scores, reading achievement, etc.)

Data analysis and interpretation concluded that:

1. Students in the inquiry-based instruction group performed better on the inference tests than did students in the control group (Taba, 1967).

2. The trained teachers had a greater success rate in getting students to respond at the higher levels than did the untrained teachers (Taba, 1967).

3. Teacher training is more effective when directed toward specific strategies than overall improvement in teaching (Taba, 1964).

The degree of teacher modeling and structuring of tasks and processing is heavy in the Taba model. For many teachers, the Taba *Strategies* are complicated and require the learning of subtle teacher behaviors (Bransford, Brown, and Cocking, 2000). A complete change in teaching style is required and may take a long time to internalize (Bransford, Brown, and Cocking, 2000). The *History Alive!* program has applied these strategies in a programmatic delivery of standards-based American history instruction. The strategies have different names than in the Bruner and Taba models; however, the inquiry processes remain the same. With the *History Alive!* program, teachers do not have to construct new lessons based upon the structure of American history or design questioning scaffoldings for units of instruction. The *History Alive!* program has married the inquiry-based models of Jerome Bruner and Hilda Taba with the content, concept and skill requirements of the Texas state standards (Texas Essential Knowledge and Skills) for American history.

Bruner laid the foundation for an inquiry-based instructional model upon his notion of the structure of the discipline and the spiraled curriculum. Hilda Taba built upon Bruner's work by defining a process for teachers to scaffolding questions and tasks.   The inquiry-based model is also considerate of the need for students to construct meaning through social interaction and for the teacher to guide that process by serving as the intermediary who helps students translate their potential into achievement.

Lev Vygotsky

The work of Russian psychchologist Lev Vygotsky fills a void perceived in Bruner's work and intimated in Taba's. Vygotsky's developmental theory stresses the inherent social nature of all human activity (Hausfather, 1996). Fosnot (1989) commented that many American educational psychologists were primarily interested in how knowledge is constructed, while Vygotsky concentrated on the question of how social and cultural factors influence intellectual development. His theory focuses on how individuals, interacting with knowledgeable social agents (teachers, peers) construct and internalize knowledge the agents have. Vygotsky believed all individual construction of knowledge is mediated by social factors (Hausfather, 1996).

The zone of proximal development is the most important Vygotskian construct clarifying the relationship between development and instruction. (Hausfather, 1996). The zone of proximal development is typically thought of as the difference between what the student can learn autonomously and what he can learn only with a helper. Effective instruction targets the learner's zone of proximal development defined as the gap between the learner's actual development determined by independent problem-solving and his level of potential development determined by problem-solving supported by an adult or through collaboration with more capable peers (Vygotsky, 1962). For a student to be operating in the zone of proximal

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development, he must be involved in an activity that is too difficult to perform independently and consequently not have the help of an instructor to be successful. Vygotsky's theory implies the need to structure inquiry tasks that provide modeling and demonstration of the inquiry process, scaffold student learning in a step by step fashion, and provide opportunities for collaborative investigation and peer support.

Teaching history is more complicated than either transmitting historical facts or engaging students in history projects. Seeing it as an epistemic activity challenges teachers to merge a substantive understanding of the disciple with an equally sophisticated understanding of learning. (Bruer, 1993). To this end, cultural psychology – referring here to the work of Vygotsky – broadens the focus of inquiry-based instruction from the individual to locate the learner within the context of both the classroom and the discipline (Cole, 1996).

Effective cognitive apprenticeship demands that we make thinking explicit (Bruer, 1993). Both teachers and students must be able to trace the development of the student's thinking in the history classroom. This is particularly complicated in history instruction as two levels of understanding hide within the activities of inquiry-based instruction. Here, Vygotsky's famous rule of cognitive development provides a wonderful guide.

> "Any function in the child's cultural development appears on two planes. First it appears in the social plane, and then on the psychological plane. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category…. Relations among people genetically underlie all higher functions and their relationships" (Vygotsky, quoted in Cole, 1996, pp. 110-111).

Learners can perform many more competencies than they could independently with social assistance; through social assistance, higher functions of thought emerge, become internalized and build self-efficacy.

<center>Indicators of Classroom Thoughtfulness</center>

Since the late 1980s, Fred Newmann, Director of the national Center on Effective Secondary Schools at the University of Wisconsin-Madison, has led a team of researchers to investigate the qualities of thoughtful social studies classes (Newmann, 1990a). His findings have since broadened to capture the relationship between authentic pedagogy and student performance. The work conducted by this team links the philosophical models of inquiry defined by Jerome Bruner and Hilda Taba to classroom behaviors responsible for high student achievement in American history. Newman and colleagues (Newmann, 1990a) investigated 10 history teachers at high-performing high schools to determine a set of classroom behaviors that explain exemplary student achievement. They found six dimensions of "classroom thoughtfulness" that explained the phenomenon. All describe the essential characteristics of Bruner and Taba's inquiry-based instruction model. Table 3 lists these indictors.

The research team divided the 15 participating teachers into a high-scoring group and low-scoring group. The five teachers that placed the greatest emphasis on thinking as an instructional goal and had the most highly-developed conceptions of thinking were designated "high scorers," while the five teachers that least emphasized thinking and possessed the least-developed conceptions of thinking were designated "low scorers." Students taught by the "high scoring" teachers according to the classroom thoughtfulness indicators generally had higher student achievement scores than students taught by the "lower scoring" teachers.   High scorers' lessons almost always included teacher-centered whole group discussion and note taking. Their

lessons were more likely to include primary sources and teacher-generated reading materials than textbook readings. Lower scorers' lessons contained teacher-centered whole group discussion much less frequently, with many lecture- or recitation-based lessons. (Onosko, 1990).

Table 3

Indicators of Classroom Thoughtfulness and Correlations to Bruner and Taba's Inquiry-Based Instruction Models

Classroom Thoughtfulness Indicators	Correlation to Bruner and Taba
1. In this class, there was sustained examination of a few topics rather than superficial coverage of many.	Taba's Concept Development
2. In this classroom the lesson displayed substantive coherence and continuity.	Bruner's Spiral Curriculum
3. In this class, students were given an appropriate amount of time to think, that is, to prepare responses to questions.	Taba's Interpretation of Data
4. In this class, the teacher asked challenging questions and structured challenging tasks.	Bruner's Structure of the Discipline Taba's Application of Generalizations
5. In this class, the teacher was a model of thoughtfulness (i.e. the teacher showed appreciation for students' ideas, and appreciation for alternative approaches or answers based in sound reasoning.	Bruner and Taba's Discovery Method
6. In this class, students offered explanations and reasons for their conclusions.	Taba's Application of Generalizations

Adapted from Newmann (1990).

As the primary classroom resource for creating historical understanding, textbooks create a set of problems all on their own. Textbooks pivot on "referential illusion," the notion that the way things are told is simply the way things were (Barthes, 1970). First textbooks eliminate metadiscourse, instances in which the author provides a narrative highlighting different points-of-view during the historical era and among historians today. Metadiscourse is common in the writings historians do for one another, but it is edited out of the writing they do for school children. In addition, textbooks do not trace how the text came to be written. They rarely cite the documentary record. If primary source documents do appear, it is typically set apart in

sidebars, so as not to interfere with the text. Finally, the textbook speaks in the omniscient third-person. No visible author confronts the reader (Wineburg, 2001).

Armbuster and Anderson (1984) found that typical history textbooks failed to offer readers "considerate" treatments, or ones in which explanations allowed the reader to determine (a) the goal of an event, (b) the plan for achieving that goal, (c) the action that was taken in response, and (d) the outcome. If a text failed to address these issues, according to these researchers, it failed as a historical explanation, with the consequence that student understanding of causality and point-of-view would be limited.

Since the 1990s, Newmann has continued his work, now broadened to research educational reform efforts that focus on authentic academic achievement and the standards of intellectual quality that define instructional "best practices." (Newmann, Marks, and Gamoran, 1996). His *School Restructuring Study* analyzed 24 restructured schools intensively for one academic year to understand how organizational features of schools can contribute to authentic pedagogy and authentic assessment.   Their findings are important to this dissertation study for two reasons: 1) they link Bruner and Taba's notions of inquiry-based instruction to contemporary educational reform efforts and 2) they begin to seek a causal link between inquiry-based teaching and standardized student achievement scores.

Newmann's definition of authentic pedagogy matches Bruner and Taba's theoretical framework of inquiry-based instruction. Authentic academic achievement, he argues (Newmann, Marks, and Gamoran, 1996), relies on disciplined inquiry such as that necessary for the production of high-quality scientific research, investigative journalism or urban planning. Disciplined inquiry consists of using a prior knowledge base from one or more fields, striving for in-depth understanding, rather than superficial awareness, and expressing conclusions through

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elaborated communication. Authentic intellectual achievement differs from conventional

achievement in that authentic achievement has aesthetic, utilitarian, or personal value apart from

documenting the competence of the learner. (Newmann, Marks, and Gamoran, 1996).

According to this model, authentic pedagogy provides students opportunities to connect

what they learn to their lived experiences outside of school. Social studies teachers who use

strategies that help students analyze and solve real-world problems will help students learn and

retain content knowledge and skills. Newmann's studies (1990a and 1990b) suggest that

inquiry-based instruction best facilitates student application of learning.   Authentic pedagogy

(Newmann, Marks, and Gamoran, 1996) must focus on:

1. Higher order thinking: with students manipulating information and ideas by
   generating, explaining, hypothesizing and arriving at conclusions that produce new
   meanings and understandings for them.

2. Deep knowledge: instruction addresses the central idea of a discipline with enough
   thoroughness to explore connections and relationships and produce complex
   understandings.

3. Connections to the world beyond the classroom.

4. Disciplinary content and process: tasks must require students to demonstrate
   understanding of ideas or theories central to the academic discipline and students
   must use methods of inquiry characteristic of that professional discipline.

After controlling for students' social background (gender, race, ethnicity, and

socioeconomic status) and academic background (achievement on the National Assessment of

Educational Progress), the effect of authentic pedagogy (inquiry-based instruction) explains 38%

of the variance among student performance in history classrooms (Newmann, Marks and

Gamoran, 1996). The design of Newmann teams' study did not allow the strongest possible test of the link between pedagogy and student performance (portfolio assessment), but it does begin to measure the outcomes of student understandings as measured by standardized achievement tests once students are exposed to inquiry-based instruction.

In many history education circles there is still the presumption that if children blacken in the appropriate circle with a No. 2 pencil they "know" history. "Such thinking is another curious holdover from behaviorist models that dominated educational thinking. For the behaviorist, assessing learning was straightforward. If the proper behavior was emitted the child knew. But in the past twenty or thirty years, we have become more astute about what the 'correct answer' really means and how the beliefs, conceptions, and assumptions students bring to instruction shape what they take from it" (Wineburg, 2001, p. 309)

In construction of the Texas Assessment of Knowledge and Skills (TAKS), the method for understanding children's knowledge has followed a traditional and behaviorist path (Wineburg, 2000). Professional educators come together to figure out the facts students should know. They write a test. When the results come back showing that students did poorly, adults rarely ask what youngsters might have been thinking or how students may have interpreted the task they were given. When students' results are positive, educators declare that mastery – ignoring that understanding is a developmental phenomenon dependent upon the learning of additional informational and acquiring new schema for making sense of the world (Gardner, 1985).

Newmann suggests that further research should link student achievement outcomes to inquiry-based instruction. "The strong empirical relationship between these standards of quality and student performance suggests that the distinction between practice or technique and

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intellectual quality may indeed deserve attention" (Newmann, Marks, and Gamoran 1996, p. 506.)

While Newmann's study concentrated on high school mathematics and social studies instruction, other contemporary scholarship suggests that inquiry-based instructional practices will prepare secondary students to demonstrate higher-order thinking.

Research on Inquiry-based Instruction

In the late 1990s, researchers at the Mid-Continent Research Education Laboratory (McREL), led by Robert Marzano, analyzed selected experimental studies on instructional strategies that could be used by teachers in K-12 classroom to increase student performance on standardized tests. The meta-analysis (Marzano, Pickering, and Pollock, 2001) combined the results from a number of studies to determine the average effect size of a given instructional practice. The researchers identified nine high-yield strategies that cut across grade levels and disciplines that, if used consistently over one academic year, lead to effect sizes of 0.59 to 1.61. Table 4 summarizes McREL's findings.

Table 4

Instructional Strategies That Affect Student Achievement

Strategy Category	Average Effect Size
Identifying similarities and differences	1.61
Summarizing and note taking	1.00
Reinforcing effort and providing recognition	0.80
Homework and practice	0.77
Nonlinguistic representations	0.75
Cooperative learning	0.73
Setting objectives and providing feedback	0.61
Generating and testing hypotheses	0.61
Question, cues and advance organizers	0.59

(Marzano, 2001)

The effectiveness of McREL's instructional practices rests on two assumptions (Marzano, Pickering, and Pollock, 2001). First, students must exhibit these behaviors, not just their teachers. For example, students who identify similarities and differences independently of the guided practice are those whose academic achievement increases significantly. When students can generate and test hypotheses and summarize content thorough organized notes, their achievement on standardized tests will soar. Second, the ability to exhibit this behavior must be routine in the classroom. Students who develop the skills to draw conclusions, organize information and deliberate in peer groups and use them routinely in their studies will experience significant increases on standardized assessments.

Most of the studies synthesized by the McREL measured student outcomes on norm-referenced assessments, and most of the studies were conducted prior to the standards movement with high-stakes accountability systems (Marzano, Pickering, and Pollock, 2001). The research is useful, however, for identifying strategies that positively affect student achievement and form the foundation for what Marzano and the McREL researchers believe will be the beginning of a new era in education – providing explicit, research-based guidance for the classroom teacher to design and deliver instruction.

Inquiry is not exclusive to social studies instruction. Educators have long advocated problem solving as an over-arching process for teaching mathematics and science. The Third International Mathematics and Science Study's eighth grade video study of mathematics instruction (Stigler, et al., 1999) highlighted the value of students working through a complex problem independent of the teacher before the teacher, with the help of several students, displays one or more acceptable solution strategies.

Although Bruner and Taba have done seminal research on inquiry-based instruction, more current research has been conducted by leaders in science education. During the 1980s, several meta-analyses were done of the effects of inquiry-based science instruction on student achievement. Wise and Okey (1983) showed a positive effect for what they called inquiry-discovery teaching for cognitive outcomes and Lott (1983) found that the inductive approach to teaching science helped students develop scientific understanding more than deductive approaches. A later review of the literature on science instruction (Olson and Loucks-Horsley, 2000) found that increased vocabulary knowledge, conceptual understanding, critical thinking and problem-solving abilities were significantly enhanced when students experienced inquiry-based science. In studies of underrepresented and underserved populations, inquiry-oriented strategies enhanced scientific ways of thinking, talking, and writing for language learners and helped them to acquire English and reasoning skills.

Most studies Colburn and Clough (1997) examined supported the collective conclusion that inquiry-based instruction was equal or superior to other instructional modes for students producing higher scores on content achievement tests in science. Several studies concluding no significant differences in content achievement between groups did not focus on the content of the discipline as the main outcomes measured. The researchers also examined the effects from different types of inquiry activities, with high school students. In this case, they examined different types of learning-cycle activities and found that student reasoning abilities improved only with learning cycles featuring guided and open inquiry type activities.

Few studies have been conducted concerning how inquiry-based instruction in the social studies affects student achievement. Bain (2000) found that inquiry-based instruction develops high school students' understanding of concepts and complicated definitions. His analysis of

student journals throughout a year of study using inquiry techniques demonstrated that students can conduct critical analyses of sophisticated primary and secondary texts; understand the limitations of knowing the past and how the present filters our interpretations of yesterday's words and actions. Voss and Wiley (2000) conclude that inquiry-based practices applied to the reading and writing of history by high school students, improves students' ability to draw cause and effect relationships. Students become more aware of the importance of source information and recognize inconsistencies and bias in text. These studies document student growth through writing samples – journals and formal essays.

What the research cannot determine are answers to questions that guide this dissertation. Are some instructional strategies more effective in certain subject areas? Are some instructional strategies more effective at certain grade levels? Are some instructional strategies more effective with students from different backgrounds? And how do the strategies, when applied to a standards-based curriculum, affect student outcomes on a high-stakes, state-mandated, criterion-reference examination?

Social Studies Instruction for Limited English Proficient Students

The changing demographic profile of American public schools students is well documented. The fastest growing sector of the school-aged population is that of minority students and within that group are ever increasing numbers of language-minority students whose first language is not English (Short, 1994). These language minority students are doubly burdened, struggling to learn English and the subject matter from various content courses.

Schools often place limited English proficient (LEP) students in English as a Second Language (ESL) classes. As students from ESL classes make the transition to mainstream classes, they are usually first enrolled in physical education, art and music; then math and

science classes. They are later placed in mainstream social studies courses which are more difficult because they depend heavily upon English language proficiency.

Unlike other content area courses, secondary social studies classes are not equipped with hands-on, manipulative activities that LEP students can use to learn and reinforce specific concepts. Needed in secondary social studies courses are instructional practices that help LEP students acquire cultural understanding at the same time as they are learning the language. Researchers at the Center for Applied Linguistics (King, Fagen, Bratt, and Baer, 1987) have investigated ways that classroom teachers can strengthen LEP students' academic language competence, develop and implement social studies lessons that are sensitive to the cultural and educational backgrounds of students, and promote these students as multicultural resources in a social studies class. With respect to social studies, LEP students benefit from nine strategies that align with the inquiry model and *History Alive!*. Table 5 records the correlation.

Although most LEP students need only two or three years to master social language skills in English, research indicates that LEP students need five to seven years to achieve a level of proficiency in academic English that is on grade level with the mainstreamed, native English-speaking student (Collier, 1989).

The *History Alive!* program selected as the intervention for this quasi-experimental design not only meets the characteristics of the inquiry-based instruction model defined by Bruner and Taba, but embeds the best practices research of McREL and the Center for Applied Linguistics into the instructional program and professional development training.

Table 5

Effective Instructional Practices for LEP Students

Instructional Strategies (King, et al, 1987)	Strategies Employed by *History Alive!*
1. offers opportunities to communicate about American history in oral, written, physical and pictorial form.	visual discovery; experiential exercises; response groups; interactive student notebook.
2. makes connections between the content being taught and students' real-life experiences.	Anticipatory sets and hooks that introduce lessons.
3. activates students' background knowledge.	Visual discovery
4. provide hands-on and performance based activities.	Experiential exercises, problem-solving group work.
5. promotes critical thinking and study skill development.	Advanced organizers and the interactive student notebook
6. pays attention to language issues and makes accommodations that will help students represent information and identify relationships.	Considerate text
7. uses graphic organizers to help students represent information and identify relationships.	Advanced organizers and the interactive student notebook
8. incorporates cooperative learning activities and seeks peer tutors among classmates.	Response groups; problem-solving group work
9. adjusts instruction for the different learning styles of the students.	Learning Styles indicator and student diagnostic (multiple intelligences)

Adapted from King, Fagan, Bratt, and Baer (1987) and Bower and Lobdell (2004).

The Components of the *History Alive!* Instructional Model

Founded in 1989 by two secondary American history teachers, Teachers' Curriculum Institute promotes standards-based social studies instruction using the tenets of the inquiry-based instructional model (Bower and Lobdell, 2004). Their products have been developed to provide teachers rich resources with which to engage history students in the attainment of historical concepts that frame the teaching of traditional American history, excite young minds to explore essential questions that spiral through the curriculum, apply understandings to other relevant scenarios and participate in experiential exercises structured on Howard Gardner's multiple

intelligences (1993). The *History Alive!* program consists of a set of standards-based lessons and professional development training intended to move teachers from traditional, didactic instruction to pedagogy informed by the inquiry method.

A central premise supporting the *History Alive!* program is the idea of the spiral curriculum. "Underlying this theory is the belief that all students can learn if a teacher shows them how to think and discover knowledge for themselves" (Bower and Lobdell, 2004). In the *History Alive!* approach, students first explore an event, idea or personality by using elemental cognitive skills and then spiral to higher levels of cognition such as synthesis, application and interpretation. Three major educational theories support the *History Alive!* approach.

1. Students have multiple intelligences. Howard Gardner's findings (1993) that students excel in two or three of the multiple intelligences (verbal-linguistic, logical-mathematical, visual-spatial, body-kinesthetic, musical-rhythmic, interpersonal, and intrapersonal) imply that every student is intelligent. *History Alive!* instruction helps teachers identify student learning preferences so that they can lead students to understanding through their cognitive strengths (Bower and Lobdell, 2004).

2. Cooperative interaction increases learning and improves social skills. Bower (Bower and Lobdell, 2004) found that increasing purposeful student interaction with structured content increases student understanding.   In the *History Alive!* approach, students learn to share ideas, tolerate differences, deliberate, and take risks (Bower and Lobdell, 2004).

3. All students can learn. Jerome Bruner's idea of the spiraled curriculum has shaped the design of lessons so that teachers can engage learners in progressively more difficult concepts through a process of step-by-step inquiry (Bower and Lobdell, 2004)

The instructional methods of the *History Alive!* approach consist of six teaching strategies that spiral through each major unit and provide a scaffold for students to construct understanding.   Table 6 outlines the *History Alive!* methodology and connects each strategy with the theoretical framework of inquiry-based instruction.

Table 6

History Alive! *Teaching Strategies and Correlation with Inquiry-Based Instructional Models.*

Teaching Strategy	Correlation to Bruner and Taba
1. Visual Discovery: use powerful images to teach social studies concepts.	Bruner's Basic Concepts (Spiral Curriculum) Taba's Concept Development
2. Social Studies Skill Builder: model the social studies skill through guided practice, provide students independent practice, give immediate feedback and debrief.	Bruner's Inquiry as a Scholar (Structure of the Discipline) Taba's Interpretation of Data
3. Experiential Exercise: use short memorable experiences to help students grasp concepts, make experiences as authentic as possible, allow students to express their feelings after the experience and help them connect the experience with key concepts.	Bruner's Discovery Method Taba's Resolution of Conflicts
4. Writing for Understanding: have student record their ideas based upon experiences with key concepts. Provide them with authentic prompts and guide students through the writing process.	Bruner's Inquiry as a Scholar (Structure of the Discipline) Taba's Application of Generalizations
5. Response Group: challenge students to discuss controversial and complex issues in small groups and facilitate a lively discussion.	Bruner's Discovery Method Taba's Resolution of Conflicts
6. Problem-solving Groupwork: challenge students with multiple-ability projects, give group members clearly defines roles, requirements, and autonomy to work; then have groups present their work.	Bruner's Inquiry as a Scholar (Structure of the Discipline) Taba's Application of Generalizations

Adapted from Bower and Lobdell (2004).

Summary of Review of Literature

At its foundation, inquiry-based instruction involves educational reform, a rethinking of what it means to know something and the ways of arriving at understandings. Although inquiry-based pedagogy provides a model of knowing and learning that should be useful to teachers, the

present model is more descriptive than prescriptive. An inquiry-based learning environment is reflected in many of the instructional design innovations discussed in the literature. Thus, if a commitment is made toward rethinking instructional pedagogy to expand the method of knowledge construction among students, then a commitment needs to be made in providing educators a clear and feasible model for teaching and evidence that faithful execution of the strategies will help students make meaning. The *History Alive!* program is such a model and this dissertation study seeks to provide some evidence concerning its impact upon student achievement as measured by a standards-based multiple choice state assessment.

CHAPTER III

METHODOLOGY

The purpose of this quasi-experimental study was to determine the effects of an inquiry-based instructional program on student achievement of American history content, concepts, and skills.

Research Hypotheses

What are the relationships between classroom pedagogy and student achievement in inquiry-based and traditional classroom environments? It was hypothesized that the use of an inquiry-based model of teaching would be related to student understanding of American history concepts. This hypothesis generated the following research questions and their corresponding null hypotheses.

Research question I. Is there a causal relationship between inquiry-based pedagogy in an American history teacher's class and increased student achievement as measured by scores on the Texas Assessment of Knowledge and Skills for American history, grades 8 and 11? Null hypothesis: there is no statistically significant difference is mean scores of students receiving inquiry-based instruction and students receiving traditional American history instruction.

Research question II. Is there a significant difference in the achievement of students participating in the *History Alive!*® American history program (Teachers' Curriculum Institute, Palo Alto, CA, www.teachtci.com) according to the teachers' level-of-implementation? Null hypothesis: There is no statistically significant difference in the mean scores of students exposed to inquiry-based instruction according teacher level of implementation.

Design of the Study

District Setting. The study was conducted in a large urban public school district in Texas. The school district administrators and principals advocate the implementation of innovative teaching strategies that have a positive effect on student achievement. The district has already embraced an inquiry-based mathematics and science curriculum and an accompanying professional development program to move teachers from a traditional, didactic approach and toward the delivery of standards-based instruction within an inquiry-based, discovery teaching and learning environment.

The school district, one of the largest in the state, was responsible for the education of 160,000 students and employed over 13,000 teachers. Approximately 60% of the student population were Hispanic, with one half identified as limited English proficient; 30% of the students were African American; 7% were white; 2% Asian and 1% American Indian. Over 70% of secondary students qualified for the free or reduced lunch program.

School Setting. The study was conducted with 21 teachers at 14 middle schools and 15 teachers at 9 high schools. All secondary campuses were designated Title I schools and approximately four teachers at each campus had responsibilities for teaching American history. During the 2003-2004 academic year, 96% of grade 11 students passed the American history TAKS examination, required for high school graduation. The average percentage of items correct on the 55 question test was 27 (i.e. the average student answered only 49% of the items correctly.) For the 2003-2004 academic year, grade 11 students passed the American history TAKS with a score of 40% correct or higher.

Among 8th graders, 82% passed the American history TAKS examination. The average percent correct of the 48 question test was 26 (i.e. the average student answered only 54% of the

items correctly.) For the 2003-2004 academic year, grade 8 students passed the American history TAKS with a score of 46% correct or higher.

Teacher Descriptions. The *History Alive!* program was funded as part of the Teaching American History Grant, an award given to the district in 2002 to fund a three-year professional development initiative to improve the teaching of American history. The grant allowed the Social Studies Department to select a cohort of secondary American history teachers to be trained in the methodology of *History Alive!* and to receive the program materials to implement the strategies.   All American history teachers in the district were provided written information about the program, and all were invited to a 3-hour orientation of the program led by a trainer from Teachers Curriculum Institute (TCI), the publisher of the *History Alive!* program. In June, 2004, approximately 50 interested teachers applied to be a member of the 2004-2005 cohort. Grant funds support a cohort of 36 teachers.

Teachers who did not meet the No Child Left Behind's High Qualified Teacher standard were given first consideration; then selection was made based upon the applicants' educational background and teaching experience. Teachers who had the fewest hours in university-based courses in the department of teacher education and alternatively certified teachers were given priority in the selection process. Teachers with less classroom experience were also given priority in selection of the cohort.

Of the 36 teachers in the American history cohort, 10 became certified teachers through alternative certification and one did not meet the Highly Qualified teacher standard. Only four had master's degrees and their average classroom experience was 7 years.

Student Descriptions. Approximately 2,200 Grade 8 students experienced the *History Alive!* program this year as a result of being instructed by one of the 21 middle school teachers in

the cohort. Approximately 1,300 Grade 11 students experienced the *History Alive!* program as a result of being instructed by one of the 15 high school teachers in the cohort. The students were randomly assigned by computer to each teacher in the participating school. Though students with a wide range of abilities may be enrolled in the general education American history courses, only the performance of general education students were used to compare the effects of an inquiry-based classroom to a traditional one. Data from all students identified as special education and gifted/talented in the general education classrooms were removed from the statistical analysis.

Human-subject permission. Permission from the school district to use aggregate student achievement data was required. A district consent form was signed authorizing the use of student data collected as part of the evaluation of the Teaching American History Grant to be used for the purpose of this dissertation study.

Sample size. The minimum sample size for causal-comparison research is fifteen subjects (Borg and Gall, 1989). Effect size relates to how well the average student receiving inquiry-based pedagogy is compared to a student who did not. If the effect size is greater than .33, it is considered to have practical significance (Borg and Gall, 1989). Before the study, estimates for group size needed were calculated using tables and methods found in Stevens' (1990). If a respectable power of .80 is used with an alpha of .05 probability, the projected group size of the cluster sample will be great enough to detect an effect size of .33 even when the group size was reduced by mortality.

Variables. For research question one, the independent variable or treatment condition/factor was classroom pedagogy, either traditional-didactic or inquiry-informed. The independent variable was manipulated by the researcher by ensuring the development of inquiry-

based practices with the *History Alive!* cohort and its subsequent use in the classroom. The control group of American history teachers spent equal time receiving professional development training on delivering standards-based American history, without the specific strategies employed by *History Alive!* and without the support materials.

For research question two, the independent variable was teacher level of implementation of the inquiry-based methods as determined by a classroom observation rubric. The rubric was developed from Hall and Hord's Concerns-Based Adoption Model (2001) and was used to ensure that the pedagogy in use by the *History Alive!* cohort member was manipulated. The Level-of-Use Rubric can be found in Table 8.

In general, teaching behaviors among the *History Alive!* cohort were categorized in one of three categories:

1. Orientation Users were trained in the inquiry-based methodologies and classroom observations recorded that the teachers were using pieces of the materials and strategies without regularity. Program materials were used but not as intended and strategies were used provisionally and in many instances not in the prescribed sequence.

2. Mechanical Users completed training in the methodologies and used the *History Alive!* program with fidelity, though frequently the focus of the lessons was not aligned to the Texas Essential Knowledge and Skills. Teachers at this level of implementation were loyal to the program materials and strategies, but not focused on maintaining the pacing of the district's scope and sequence.

3. Routine Users completed training and were observed to be using the program materials and methodologies as designed – to teach the curriculum standards.

Routine users kept the pace of the district scope and sequence and followed the

History Alive! instructional scaffold with fidelity.

The dependent variable for this study was student performance on the Texas Assessment of Knowledge and Skills for American history, grades 8 and 11. Statistical analysis focused on the mean number of items correct, not the passing rates of students in the treatment and control groups.

Control group. Teachers in the control group did not receive training or materials from *History Alive!*, and they had received neither in previous years with the district. Classroom observations determined that control group members were using district resources (the scope and sequence, curriculum objective clarifications, textbook and ancillary materials, benchmark assessment questions) to design and deliver instruction. The control group consisted of the American history teachers at grades 8 and 11 who did not received training or materials from the *History Alive!* program and who were teaching general education students at the participating 14 middle and 9 high schools. There were 33 Grade 8 teachers and 15 Grade 11 teachers in the control group.

Treatment group. Each *History Alive!* teacher received five days of training in the summer of 2004 by a lead consultant from Teachers' Curriculum Institute; a two-day follow up session to help teachers reflect and adjust their practice, and three classroom observations to determine level of implementation. The middle school members of the cohort received the *History Alive!* teacher kit with instructor's handbook and a classroom set of student textbooks. The high school members received four unit binders on critical topics in American history:

1. The United States Coming of Age, 1890-1920
2. The Great Depression

3. The United States in World War II

4. The Cold War

5. The Civil Rights Movement

Each binder provided high school teachers the questioning strategies, student primary source documents and visuals (placards and transparencies) to lead inquiry-based lessons. All lessons in the *History Alive!* program that aligned with the state curriculum for American history were identified in the district's scope and sequence. Each member of the cohort received the correlations between the *History Alive!* program and the state curriculum standards to ensure that materials and strategies were used to deliver lessons linked directly to one or more state standards. Some of the *History Alive!* materials and activities did not match the Texas curriculum for the teaching of American history. Those lessons not matching the standards were not mentioned in the scope and sequence

Neither the control nor the treatment groups were provided scripted lessons or told how to teach. It was the belief of the school district that the procedures for lesson delivery should not be predetermined by an external authority. Nevertheless, each teacher was expected to guide students through the sequence of units that allow for the development of conceptual understanding of American history. Each teacher was given the same set of learning objectives for the units taught and each teacher had the benefit of informing their instruction based upon data from district administered benchmark examinations. District benchmark examinations identified each student's progress in mastering the state curriculum. As required by board policy, three examinations, based on the district's scope and sequence for American history, were given students: two in the fall semester, one in the spring semester.

Experimental Design

A non-equivalent, quasi-experimental control group posttest design was used to study the effect of inquiry-informed pedagogy on student achievement across traditional and inquiry-based classroom environments.

Quasi-experimental designs can be used by researchers when true experimental designs are not possible or feasible (Borg and Gall, 1989). In a quasi-experimental design, the researcher does not have to randomly assign subjects to the treatment or control groups, completely control when the treatment is applied, or completely control when the observations are conducted as in a true experimental design. According to Borg and Gall, quasi-experimental designs need to control one or two of the following: when the observations are made, when the treatment variable is applied and which intact group receives treatment. For these reasons, a quasi-experimental design is more appropriate for studies conducted in field settings. The quasi-experimental design was chosen for this study because the researcher did not randomly assign teachers to the control and treatment groups. However, it was possible to control when the classroom observations were made, when the treatment was applied, and which group received the treatment of inquiry-based methodologies.

Data Collection Procedure

The treatment group was measured three times with a researcher-developed classroom observation rubric developed in collaboration with the lead consultant from Teachers' Curriculum Institute (Table 8). Teachers were assigned a level of implementation category when two of the three observations agreed. The lead consultant for TCI and an instructional specialist employed by the school district visited the cohort, recorded their findings and reached

consensus on placement of the teacher's practices with the *History Alive!* model on the level of implementation rubric.

Raw scores from the Texas Assessment of Knowledge and Skills (TAKS) were collected in June, 2005 with student scores assigned to the treatment or control group for statistical analysis for research question one and with student scores among the *History Alive!* participants assigned to teacher level of implementation for research question two.

Determining the Level of Use: The Concerns-Based Adoption Model

The value of this study rests upon the relationship between professional development (in this case the training conducted by the Teachers' Curriculum Institute) and classroom implementation. Fullan (1990) describes studies of professional development strategies that involved training all teachers in a district over a three-year period with the goal of improving student reading achievement in high school. The studies found a significant increase in reading scores and attributed them to several characteristics of the professional development model -- learning through practice, linking prior knowledge of curriculum and pedagogy to new information and methods, deepening understanding through reflection on practice and solving problems related to implementation collaboratively.

Guskey (1986) adds to these characteristics of effective professional development the importance of receiving regular feedback concerning the impact of instruction on student learning. Accordingly, professional development must be designed to promote and support continuous learning throughout the period of experimentation and practice.

One credible model for understanding the relationship between staff development and the implementation of an innovation is the Concerns-Based Adoption Model (Hall and Hord, 2001).

This model for helping educators understand the components of curricular change emphasizes the importance of instructional fidelity.

Developed by Hord, Huling-Austin, and Hall (1989) and based on the work of Fuller (1970), effective professional development moves teachers' concerns from non-concern (the pre-teaching phase) toward satisfying self-concerns (early teaching phase), and finally to concerns with students (mature teaching phase). As teachers' concerns matriculate through on-going professional development, the level of use of the implementation will more closely approximate its ideal teaching and learning conditions. This model, then, poses the following challenge to educators. Before an instructional program can be evaluated, educators must be sure that the behaviors and methods proposed during professional development are implemented with fidelity in the classroom.

Hall and Hord's model articulates several diagnostic tools to determine the fidelity of implementation. The Levels-of-Use rubric (Table 7) captures the degree to which teachers adopt the innovation. The following table summarizes the C-BAM's levels-of-use continuum.

The Levels-of-Use rubric was employed in this study to determine the degree to which the *History Alive!* program and the United States History curriculum were implemented. However, the general rubric designed by Hord, Huling-Austin and Hall (1989) was customized to fit the specific components of the *History Alive!* program.

The lead consultant for Teachers' Curriculum Institute and co-author of the *History Alive!* program collaborated with two curriculum specialists employed by the school district to create a specific rubric – one that defined the observable evidence that would help identify each teacher's level of use.

Table 7

The Concerns-Based Adoption Model's Level of Use Rubric

Level 0 - Nonuse
State in which the individual has little or no knowledge of the innovation. No involvement with it, and is doing nothing toward becoming involved.
Level I – Orientation
State in which the individual has acquired information about the innovation and has explored its value orientation and what it will require.
Level II- Preparation
State in which the user is preparing for first use of the innovation.
Level III – Mechanical
Stare in which the user focuses most effort on the short-term, day-to-day use of the innovation with little or no time for reflection. Changes in use are made more to meet the user needs than the needs of students and others. The user is primarily engaged in an attempt to master tasks required to use the innovation. These attempts often result in disjointed and superficial use.
Level IVA – Routine Use
Use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improve innovation use or its consequences.
Level IVB – Refinement
State in which the user varies the use of the innovation to increase the impact on students within their immediate sphere of influence. Variations in use are based in knowledge of both the short- and long-term consequences for students.
Level V – Integration
State in which the user is combing own efforts to use the innovation with related activities of colleagues to achieve a collective impact on students within their common sphere of influence.
Level VI – Renewal
State in which the user is reevaluates the quality of use of the innovation, seeks major modifications of, alternatives to, present innovation to achieve increased impact on students, examines new developments in the field, and explores new goals for self and the organization.

The essential components identified by the group were: 1) Lesson alignment to the Texas standards for American history and the school district's scope and sequence; 2) Use of inquiry-based pedagogy, based upon the best practices embedded within the *History Alive!* training; 3) Use of the *History Alive!* materials (both teaching and learning resources); and 4) the quality of student work as evidenced by the interactive student notebook each student kept to document their development of understanding American history concepts.

Only three implementation categories were developed based on the C-BAM rubric, since rarely do teachers in the first year of implementing a new curriculum advance beyond the routine level of use (Hord, Huling-Austin, and Hall 1989).

Each teacher's placement on the level-of-use rubric was determined after three classroom observations. When two observations recorded the same level of use, the teacher's implementation for the academic year was labeled by that category. For example, a teacher whose first observation was evaluated at the orientation level, but whose second and third observations, later in the year, exhibited the qualities of a mechanical user, was identified as a mechanical user for the year and that teachers' student achievement results was linked to that level of use (mechanical, in this case) for the purposes of analyzing student achievement scores at the end of the year.

Table 8

The Level of Use Rubric Used to Evaluate the Implementation of the History Alive! *Innovation*

Level of Implementation	Lesson alignment to academic standards	Use of inquiry-based pedagogy (see Table VI)	Use of the *History Alive!* materials	Quality of student work
Orientation	the content information in the lesson partially focused on the essential knowledge in the state standards	the teacher delivered the lesson by using some of the inquiry-based strategies of the *History Alive!* program	the teacher rarely used the HA materials to deliver the lesson	students are rarely engaged in inquiry-based learning and their work generally does not reflect engagement in inductive reasoning and making sound generalizations about American history
Mechanical	the content information in the lesson focused on most of the essential knowledge in the state standards	the teacher delivered the lesson by routinely using the inquiry-based strategies of the HA program	the teacher routinely used the HA materials to deliver the lesson	students are routinely engaged in inquiry-based learning and their work reflects some engagement in inductive reasoning and making sound generalizations about American history
Routine	the content information in the lesson focused on all of the essential knowledge in the state standards	the teacher delivered the lesson by using the inquiry-based strategies of the HA program and the strategy was appropriate to the cognitive level of the academic objective	the teacher effectively used the HA materials to lead the students to make an generalization in American history	students are effectively engaged in inquiry-based learning and their work reflects the ability to engage well with inductive reasoning tasks and to make sound generalizations about American history

Adapted from Bower and Lobdell (2004).

Statistical Analysis

Inferential statistics. An Analysis of Variance (ANOVA) was used as a form of statistical control. ANOVA was selected because it measures differences among groups or level of the independent variable. No statistical method will be used to reduce error due to student differences since students identified as receiving special education or advanced academic services were removed from the sample before statistical analyses were run.

Tests for assumption in inferential analysis. Assumptions for the ANOVA procedure are listed below and discussed in reference to this study. Failure to meet these assumptions can change the Type I error rate and the appropriateness of the analysis interpretation.

1. The observations are normally distributed on the dependent variables in each group. Thus, the F statistic is robust with respect to the normality assumption.

2. The population variances for the groups are equal. This is the homogeneity of variance assumption. If the group sizes are equal or approximately equal, (largest/smallest is less than 1.5) then the F statistic is robust for unequal variances. (Borg and Gall, 1989). In this study, the group sizes were approximately equal.

3. The observations are independent. This is the most important assumption because even a small violation produces a substantial effect in both the level of significance and the power of the F statistic. Since the means of these groups instead of the individual scores were used in the analysis, this assumption was not violated.

Since the F statistic was robust for unequal variance when the group sizes are equal or approximately equal, group sizes will be checked for to meet the test of homogeneity of variance. The observations were independent. Using SPSS procedures, an analysis of variance

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was run to test the first and second null hypotheses. The alpha level for these two statistical analyses was set at 0.05.

Validity of the Study

Validity is the process of collecting evidence to support inferences from the use of resulting scores from an assessment. This study sought to determine the gains in student understanding of American history through scores on the Texas Assessment of Knowledge and Skills (TAKS) exams at grades 8 and 11. The TAKS exams are criterion-referenced instruments that capture student mastery of content knowledge through the testing of selected curriculum objectives from the full body of standards that constitute a course of study. For example, the Grade 8 TAKS examination assesses students' knowledge of American history through a series of questions testing approximately 40 curriculum objectives. The curriculum objectives actually tested vary from year to year and are not known by public school educators prior to the examinations.

The Texas Education Agency works with committees of Texas educators, test developer specialists to translate the curriculum objectives into items that measure student knowledge and skills. The state agency tests items prior to placement on the TAKS exams to ensure that the language of the items is clear and relevant to the content being assessed. The *History Alive!* program implemented as part of this study was aligned to the Texas Essential Knowledge and Skills with lessons that did not align to the state standards absent from the district's scope and sequence documents. No single test, however, can capture students' knowledge of a comprehensive curriculum, especially when the test assesses only part of that curriculum. However, the TAKS examinations are the best instruments available to determine the extent to

which students have mastered American history as taught in the Texas public schools (TEA, 2002).

This study was examined for validity based on statistical conclusion validity, internal validity, construct validity, and external validity.

Statistical Conclusion Validity. Statistical conclusion validity is concerned with the ability of the study to discern a difference between two variables. Investigations of the following concerns will support statistical conclusion validity.

1. Estimated statistical power is not low.

2. None of the assumptions of statistical tests was violated for the data that was reported.

3. The achievement tests for American history meet standards of content validity, with the Texas Education Agency ensuring that each question is aligned to content standards and that each question has only one correct answer. The TAKS is developed and administered by the Texas Education Agency with focus groups of educators regularly reviewing the item bank for congruence with state standards.

4. Groups instead of individuals were used for the unit of analysis.

Internal validity. Internal validity reflects the answer to the question "to what degree do extraneous variables influence the results of the study and therefore the conclusions of an investigation?" (Stevens, 1990). This aspect of a study's validity is largely a function of its research design. The following statements indicate efforts that were made to control threats to internal validity.

1. The time spent monitoring implementation reduced significant threats to maturation.

2. Mortality of numbers was controlled by a larger than necessary sample.

One threat to internal validity that might exist is statistical regression because the comparison groups were selected based upon extreme teacher need or deficiency in preparing to become a highly qualified American history teacher. Additionally, treatment verification accomplished through random observation revealed some treatment diffusion. On some occasions the *History Alive!* teacher used some traditional instructional strategies and the traditional teacher used some inquiry-based practices.

External Validity. External validity refers to the dependability with which conclusions are drawn about the generalizability of a causal relationship to and across populations of persons, settings, and times. (Borg and Gall, 1989). The teachers who participated in this study were chosen in a nonrandom manner. The use of a nonrandom sample based upon an application process somewhat limits the generalizability of this study's findings. This nature of the study limits its generalizations to general education high school and middle school students in a large urban district in Texas taught by teachers with minimal experience and training.

Summary

An analysis of variance (ANOVA) was used to analyze the data gathered in a causal-comparative study of the effect of inquiry-based pedagogy on achievement scores of general education American history students across traditional and inquiry-informed classroom environments. Posttest scores based upon the state assessment of American history were used to measure achievement during a 30-week course of study.

Manipulation of the classroom environment was ensured by the protocol of the study. The teachers in the *History Alive!* cohort received intensive training on inquiry-based methodologies and designing student tasks. Equal time was spent developing the teachers in the

control group. They received training on delivering standards-based instruction and using basal

material to help students acquire the requisite knowledge and skills for American history.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The call for educational reform in the teaching of social studies has been the suggestion that pursuing inquiry-based principles will lead to improvement in student achievement. (Taba, 1967; Gross, 1977; Wiggins and McTighe, 1998; Bain, 2000). The purpose of this study was to compare the effectiveness of two types of pedagogy: traditional and inquiry-based upon student achievement as measured by a standards-based, state administered examination. Also, student achievement outcomes were compared by teachers' level of implementation within the group of students who received inquiry-based instruction. The results of this study provide information that will help guide secondary social studies teachers in their selections of instructional practices when teaching a standards-based curriculum with a high-stakes assessment.

This chapter is divided into three sections: a description of the sample, an overview of the statistical procedures of the study, and the results of the inferential analysis of the research questions.

Description of the Sample

Tables 9 and 10 present the demographic information for the Grade 8 and Grade 11 American history teachers, respectively, who participated in the study.   A total of 54 Grade 8 American history teachers participated in the study. The sample included two groups, one comprised of 21 teachers, the treatment group that received training in the methods of the *History Alive!*® American history program (Teachers' Curriculum Institute, Palo Alto, CA, www.teachtci.com) and delivered inquiry-based learning, and one comprised of 33 teachers, the control group that received traditional training and delivered didactic instruction. A total of 30

Grade 11 American history teachers participated in the study. This sample includes treatment

and control groups each comprised of 15 teachers.

Table 9

Demographic Information of American History Teachers in Sample, Grade 8

	Sample		Teachers in Treatment Group		Teachers in Control Group	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
	N=54		N=21		N=33	
Ethnicity						
Caucasian	32	59.3	12	57.1	20	60.1
African Am.	20	37.0	9	42.9	11	33.3
Hispanic	2	3.7	0	0.0	2	6.6
Gender						
Female	41	76.0	17	81.0	24	72.7
Male	13	24.0	4	19.0	9	27.3
Yrs. Experience	9.1		6.5		10.8	

Table 10

Demographic Information of American History Teachers in Sample, Grade 11

	Sample		Teachers in Treatment Group		Teachers in Control Group	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
	N=30		N=15		N=15	
Ethnicity						
Caucasian	22	73.3	10	66.7	12	80.0
African Am.	8	26.7	5	33.3	3	20.0
Hispanic	0	0	0	0.0	0	0.0
Gender						
Female	17	56.7	9	60.0	8	53.3
Male	13	43.3	6	40.0	7	46.7
Yrs. Experience	10.2		8.1		12.3	

The sample shows a lack of representation in ethnicity with no Hispanic teachers participating in either the middle school or high school treatment groups. A difference in teaching experience also exists, with the control group within both the middle and high school having approximately 4 more years of classroom experience than the treatment groups.

Overview of the Statistical Procedure

Data were collected from the students of the Grade 8 and Grade 11 teachers participating in the study, using the 2005 Texas Assessment of Knowledge and Skills in American history. Only the scores of general education students participating in a general education American history class were collected and used for the study. Students who were identified as gifted and talented or limited-English proficient in need of sheltered instruction were not identified as part of the data sample. Students, however, who were identified as receiving special education services and who were served during the course of the year in the general education classroom were included in the study, in both treatment and control groups.

Applications of the independent t-test and the analysis of variance were conducted through computer analysis using Statistical Package for the Social Sciences (SPSS) for Windows. To determine if there was a statistically significant difference in student achievement between the groups of students exposed to *History Alive!* and those exposed to traditional pedagogy, an independent t test was conducted. Calculations were completed and t-values were obtained. The critical t-values were identified and the t values were compared. The critical value if the t value fell between the positive and negative value of the critical t-value, no significant difference was found. If the t-value fell into the critical region, it was concluded that there were sufficient data to support a finding of a significant difference.

To determine whether student achievement varied significantly according to teachers'

level of implementation of the *History Alive!* program, an analysis of variance was conducted

among three levels of implementation: orientation, mechanical and routine. The observation

rubric and classroom indicators used to determine teachers' level of implementation can be

found in Table 8.

Results of Inferential Analysis

Research Question I. Is there a causal relationship between inquiry-based pedagogy in an

American history teacher's class and increased student achievement as measured by scores on

the Texas Assessment of Knowledge and Skills for American history, grades 8 and 11?

Null Hypothesis One: There is no statistically significant difference in mean scores of

students receiving inquiry-based instruction and students receiving traditional American history

instruction. Table 11 reports the t-test results of a comparison between the treatment and control

groups. At grade 8 the 2,177 students who were exposed to the *History Alive!* program scored an

average of 31.51 correct answers (out of 48 questions) on the 2005 Grade 8 TAKS Examination

of American history; whereas the 3,436 students who were taught by a traditional, didactic

pedagogy scored an average of 29.93 questions correct on the same examination. The t value

exceeds the critical value (1.645) of t-distribution at the .05 level of significance. Therefore, the

results of the Grade 8 American history scores reject the null hypothesis.

Table 11

History Alive! *and Non-*History Alive! *Students' 2004-2005*
Social Studies TAKS Performance, t-test results

Student Group	N	Mean	Mean Diff.	Std. Dev.	*t*	*P*
			Grade 8 Students			
History Alive!	2,177	31.51	1.58	9.03	18.42*	<.001
Non-*History Alive!*	3,436	29.93		8.23		
			Grade 11 Students			
History Alive!	1,246	38.08	.37	9.12	.920	.310
Non-*History Alive!*	1,250	37.71		8.82		

The results among the Grade 11 American history students were different. Table 11

demonstrates that the 1,246 Grade 11 students exposed to *History Alive!* averaged 38.08

questions correct (out of a possible 55 questions) on the 2005 Exit-level TAKS Examination of

American history; whereas the 1,250 students in the control group averaged 37.71 questions

correct. The mean difference in raw score between the treatment and control groups (0.37) fell

within the critical value (1.645) of the t distribution at the .05 level of significance. Therefore

the null hypothesis was not rejected because there was no statistically significant difference

between the raw scores of the students in the treatment and control groups.

Research question II.   Is there a significant difference in the achievement of students in

the *History Alive!* program according to the teachers' level of implementation?

Null hypothesis: There is no statistically significant difference in the mean scores of

students exposed to inquiry-based instruction according teacher level of implementation.

Before analyzing the student data, teachers participating in the *History Alive!* program

were observed three times during the academic year to determine the level of program

implementation. One program specialist from the Teachers' Curriculum Institute and one

curriculum specialist from the school district conducted the three classroom observations.   Table

12 records the results by the grade 8 teachers' level of use. The teaching of the treatment group

fell into three of the categories described generally by the Concerns-Based Adoption Model and

specifically by the level-of-use rubric customized to the *History Alive!* innovation.

Table 12

Level of Use among the History Alive! *Teachers, Grades 8 and 11*

Professional Development Action	Grade 8 *History Alive!* teachers			Grade 11 *History Alive!* teachers		
	Orientation	Mechanical	Routine	Orientation	Mechanical	Routine
July 2004: Initial Training	21	0	0	15	0	0
October 2004: First Observation	9	8	4	6	7	2
November 2004: Follow-up training	N/A	N/A	N/A	N/A	N/A	N/A
January 2005: Second Observation	8	6	7	3	6	6
March 2005: Third Observation	8	6	7	3	6	6

In October, 2004, the two observers witnessed each teacher in the *History Alive!* group

deliver a lesson. They talked with each teacher to clarify what they saw in the classroom and

they reviewed student work in the interactive student notebooks as evidence that the curriculum

was being taught consistently. Among the grade 8 teachers, nine were at the orientation level –

rarely using the resources and strategies to deliver inquiry-based instruction. Eight teachers were

at the mechanical level – routinely using the strategies and materials, though not necessarily

focused on teaching the state standards for American history. Only four were using the strategies

and teaching materials to deliver standards-based instruction.

In November, 2004, based upon the initial observations, a two-day professional

development seminar was held with all of the *History Alive!* participants attending. The goal of

the session was to revisit the strategies and focus on how to address student reactions to the new

methods. Teachers already at routine use shared their successes and the teachers developed into a cohort that frequently contacted each other for support.

By January, 2005, several of the grade 8 teachers had matured in their implementation. The teachers were almost evenly divided by the three levels of use categories (8 orientation, 6 mechanical, and 7 routine users). In February, 2005, the curriculum specialist visited the teachers who were still at orientation level and team taught a lesson with them. Since her job involved providing technical support to secondary social studies teachers (i.e. lesson planning, team teaching, auditing, data analysis/interpretation), she performed this intervention seamlessly and without drawing attention to this service as a pre-planned feature of the *History Alive!* program.

The same two observers witnessed the lessons taught by the grade 11 *History Alive!* teachers on the same calendar cycle. The initial training in summer 2004 was followed by an initial observation in October 2004, a 2-day follow-up seminar, and additional observations in January and March 2005. By the spring semester 2005, three high school teachers remained at orientation level and six teachers each were implementing at the mechanical and routine stages. As part of her district duties, the social studies specialist provided technical assistance to the three high school teachers at the orientation level during the spring semester.

With the *History Alive!* teachers' level of use identified, the student achievement data from the 2005 American history TAKS examinations was analyzed to determine if student performance varied significantly according to their teacher's fidelity to the program.

Student scores on the Grade 8 TAKS exam are compared in Table 13. A total of 2,177 middle school students had a teacher trained in the inquiry-based methodologies of *History Alive!* and had access to the books and learning materials provided by the program. In the spring

2005, 837 students had a teacher at the orientation level of use, with an average raw score on

TAKS of 26.99 (56% correct); 639 students were taught by a teacher at the mechanical level of

use, with an average raw score of 32.25 (67% correct); and 701 students had instruction at the

routine level with an average raw score of 36.23 (76% correct).

Table 13

History Alive! *Students' 2004-2005 Social Studies TAKS Mean Scores*
by Teachers' Level of Use, Grade 8

		Mean	% Correct	Std. Deviation	N
	Orientation	26.99	56.2	8.30	837
Group	Mechanical	32.25	67.1	8.49	639
	Routine	36.23	75.5	7.76	701
	Total	31.51	65.6	9.03	2,177

To determine if the mean scores were significantly different, an analysis of variance was

conducted between each of the three groups. Table 14 reveals that the mean differences are

statistically significant at the .05 level for each comparison. For instance, the mean difference

between the orientation and mechanical groups (5.26) exceeds the critical value at the .05 level.

The mean difference between the mechanical and orientation groups (3.98) also exceeded the

critical value at the .05 level of significance. As the teachers' fidelity to program

implementation increased, so did student achievement scores.

Table 14

History Alive! *Students' 2004-2005 Social Studies TAKS:*
Analysis of Variance by Teachers' Level of Use, Grade 8

				Mean Difference (J)	Std. Error	P
(I) Group	Orientation	(J) Group	Mechanical	-5.26*	.43	<.001
			Routine	-9.24*	.42	<.001
	Mechanical	(J) Group	Orientation	5.26*	.43	<.001
			Routine	-3.98*	.45	<.001
	Routine	(J) Group	Orientation	9.24*	.42	<.001
			Mechanical	3.98*	.45	<.001

*The mean difference is significant at the .05 level. Mean difference implies raw scores.

Student scores on the Grade 11 TAKS exam are compared in Table 15. A total of 1,246 high school students had a teacher trained in the inquiry-based methodologies of *History Alive!* and had access to the learning materials provided by the program. In the spring 2005, 249 students had a teacher at the orientation level of use, with an average raw score on TAKS of 36.67 (67 % correct); 507 students were taught by a teacher at the mechanical level of use, with an average raw score of 36.92 (67% correct); and 490 students had instruction at the routine level with an average raw score of 40.00 (73% correct).

Table 15

History Alive! *Students' 2004-2005 Social Studies TAKS Mean Scores*
by Teachers' Level of Use, Grade 11

		Mean	% Correct	Std. Deviation	N
Group	Orientation	36.67	66.7	9.14	249
	Mechanical	36.92	67.1	9.38	507
	Routine	40.00	72.7	8.49	490
	Total	38.08	69.2	9.12	1,246

To determine if the mean scores were significantly different, an analysis of variance was also conducted between each of these three groups. Table 16 reveals that the mean differences are statistically significant at the .05 level between the routine group and the orientation and mechanical user groups. For instance, the mean difference between the routine and orientation groups (3.33) and the routine and mechanical users (3.08) exceeds the critical value at the .05 level. However, the slight mean difference between the orientation and mechanical users (.25) does not exceed the critical value at the .05 level. Therefore the null hypothesis is not rejected for the comparison between the orientation and mechanical level of use among the Grade 11 *History Alive!* teachers.

Table 16

History Alive! *Students' 2004-2005 Social Studies TAKS:*
Analysis of Variance by Teachers' Level of Use, Grade 11

				Mean Difference (J)	Std. Error	p
(I) Group	Orientation	(J) Group	Mechanical	-.25	.70	.930
			Routine	-3.33*	.70	<.001
	Mechanical	(J) Group	Orientation	.25	.70	.930
			Routine	-3.08*	.57	<.001
	Routine	(J) Group	Orientation	3.33*	.70	<.001
			Mechanical	3.08*	.57	<.001

*The mean difference is significant at the .05 level.

Summary

The purpose of this research was to determine whether there is a causal relationship between two types of pedagogy, traditional or inquiry-based and student achievement. This quasi-experimental study was comprised of 54 grade 8 American history teachers, their 5,613 students and 30 grade 11 American history teachers and their 2,496 students. The majority of the teaching sample was both Caucasian and female, with the average having 9 years teaching

experience. The students were grouped according to two different types of pedagogy: inquiry-based and traditional/didactic.

A t-test and an analysis of variance were used to test two null hypotheses. Null hypothesis one was rejected for the grade 8 students. There was a significant difference between the achievement scores of the students receiving inquiry-based pedagogy based on the *History Alive!* program than those students receiving the traditional instruction for the grade 8 students but not for the grade 11 students. Null hypothesis two was also rejected. A significant difference in student achievement was found based upon their teachers' level of implementation of the inquiry-informed instruction of the *History Alive!* program.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECCOMENDATIONS

The teaching of American history is recognized across the country as being of great importance for the preservation of democracy and free-enterprise and the need to develop responsible and literate citizens (Ravitch, 1998). The purpose of this study was to determine if secondary public school students acquire a better general understanding of American history through inquiry-based, constructivist pedagogy. As the study progressed, important issues surfaced regarding the measurement of student understanding and the instructional practice.

This quasi-experimental study focused on the ability of students to gain an understanding of traditional American history as defined by the Texas Essential Knowledge and Skills(TAKS) – a set of standards rich in both universal, historical concepts and factual recall of important people, dates, and events. The study attempted to systematically compare the effect of inquiry-based pedagogy and didactic, more traditional teaching because there are few empirically-based studies confirming the benefits of teaching through inquiry, even though the call for constructivism can be found in many calls for educational reform (Newmann, 1990a; Parker, 1991; Short, 1994; Erickson, 1998; Wiggins and McTighe, 1998; Voss and Wiley, 2000; Bain, 2000).

This study developed from several different stages – all of which conformed to the terms of a Teaching American History Grant awarded to the district by the U.S. Department of Education. First, the selection of teacher participants was considered. The school district offered American history teachers the opportunity to receive training and materials from the *History Alive!* ® American history program (Teachers' Curriculum Institute, Palo Alto, CA, www.teachtci.com). The district received more applications than funding could support.

Teacher participants in the *History Alive!* program were selected based on the teacher's need for additional training in pedagogy, teacher's need to develop content knowledge of American history, the geographic area of the school district and the historical performance of students on the American history TAKS exam at their assigned campus. According to the conditions of the grant, teachers who had little training in inquiry-based pedagogy, little training in American history content and teachers who served students at traditionally low-performing schools were given preference.

Second, training was held in the summer of 2004 for the cohorts of American history teachers participating in the *History Alive!* training. During the week-long session teachers received information on delivering inquiry-based instruction and applied to techniques to the districts' curriculum objectives articulated in the scope and sequence. They planned lessons together, simulated the classroom activities, evaluated student products (examples provided by Teachers' Curriculum Institute), and collaborated to work through typical problem situations that were given them by the *History Alive!* trainers and school district specialists.

Third, a curriculum specialist employed by the school district and the lead consultant/trainer with Teachers Curriculum Institute collaborated to create a level-of-use rubric based on the Concerns-Based Adoption Model. That rubric was used to assess classroom instruction three times during the school year. The first observation, in October 2004, provided the curriculum specialist and *History Alive!* trainer to design a two-day follow up training for all participants in November 2004. With the goal of moving implementation toward routine use of the innovation, the effects of the training were measured by a second and third classroom observation of each participant.

Using the SPSS statistical analysis program, student achievement data on the 2005 Texas Assessment of Knowledge and Skills (TAKS) for American history were analyzed by two procedures. A t-test compared the mean scores of students receiving *History Alive!* instruction and their grade peers who received traditional instruction at the same school. An analysis of variance compared student achievement within the group of *History Alive!* teachers based upon their level of instructional implementation.

Research Question I.

Is there a causal relationship between inquiry-based pedagogy in an American history teacher's class and increased student achievement as measured by scores on the Texas Assessment of Knowledge and Skills for American history, grades 8 and 11? The statistically significant difference between the inquiry-based and traditional methods of teaching in the grade 8 group was an expected finding of this study. The nature of objective tests like the TAKS value recall and rote learning and promote the idea that there is only one right answer for every question. That students exposed to an inquiry-based pedagogy for the teaching of a heavily content based discipline suggests that students who solve open ended tasks and demonstrate understanding through an interactive notebook and historical role-plays and simulations can learn and retain essential historical knowledge to a great extent than students taught that knowledge directly and without many, if any, opportunities for creative application.

The average raw score between the grade 8 students exposed to *History Alive!* and those who were not was approximately 1.5 questions. The statistical significance of the mean difference is explained in part by the large sample size (5,613 students).

The even smaller difference between student means among the grade 11 students (.37 of a question) was not only not statistically significant but also not significant in determining

whether a student passed the test. The Grade 11 TAKS examination, unlike the Grade 8 TAKS

test is a comprehensive assessment of students' knowledge across four grade levels – Grade 8

American history (Colonization through Reconstruction), Grade 9 World Geography, Grade 10

World History, and Grade 11 American history (Since Reconstruction).   Although the Grade 11

TAKS primarily assesses knowledge taught at Grade 11 (approximately 67%), the portion of the

test assessing retention of prior knowledge (approximately 33%) most likely explains why

student raw scores between the *History Alive!* and non-*History Alive!* students were not

significantly different.

Also, such small mean differences oftentimes mask a significant difference that occurs

when teachers who implement instructional programs with fidelity are combined in the same

group as less effective implementers and even teachers who do not change their behavior after

professional development. The need to analyze the data by teacher level-of-use is important to

discern this difference

Research Question II.

Is there a significant difference in the achievement of students in the *History Alive!*

program according to the teachers' level of implementation?   Analysis of variances at both the

grade 8 and grade 11 *History Alive!* groups indicate that there is a wide difference – statistically

significant and educationally significant when one considers that passing the Grade 11 American

history TAKS is required for students to graduate in Texas.

Students who had a teacher at the routine level of use clearly outperformed the students

who received orientation-level or mechanical instruction. A small sample of grade 11 students

receiving orientation-level instruction of inquiry-based pedagogy did not differ, statistically,

from the students receiving a mechanical level of instruction. With this exception, the difference

between teacher's level of use of inquiry-based instruction and student achievement was clear: student achievement increases along with the teacher's implementation of a standards-based curriculum delivered through inquiry-based instruction.

Limitations of the Study

Since the population studied was specific to general education students in American history courses taught in the state of Texas, it is inappropriate to generalize the findings of this study to the general population of high school students with different characteristics.   The study's generalizability is also limited by ecological validity threats – the subjects were selected from only one large urban school district. The sample drawn from the treatment group was not randomized but derived from a sample that conformed to invitational priorities established by a federal grant. Also, the level of expertise of the teachers implementing the inquiry-based *History Alive!* program is a limiting factor because the level of implementation was not uniform. Despite attempts to mediate the level of use determination through classroom observations and through some technical assistance provided by one instructional specialist, the actual service students received may vary beyond what was witnessed and recorded three times during one academic year.

Implications

This study's importance rests in it being one of few studies that has attempted to systematically compare inquiry-based and traditional pedagogy based on student outcomes linked to a high-stakes state assessment. To the author's knowledge, this study is the largest of its kind related to the instructional implications of teaching standards-based American history. The findings suggest the value and importance of teaching for meaning and understanding through student inquiry.   Traditionally considered a mismatch to an objective assessment, the

inquiry-based approach by a *History Alive!* program coupled tightly to a district articulated standards-based curriculum has the real potential to encourage educational reform toward a more constructivist approach.

Since most history educators continue to use more traditional, didactic teaching methods, this study is important for instructors and those administrators responsible for their professional development to consider a nontraditional approach to teaching. Clearly, the method of assessing students' knowledge and skills must be congruent with the type of instruction for evaluation to have the greatest meaning. Since inquiry-based methods align better with an assessment of student's ability to think analytically and compose a thoughtful response, achievement in analogical reasoning and writing would serve as additional measures to gauge the effects of inquiry-based instruction.

<div align="center">Conclusions</div>

Based upon the analyzed data, the following conclusions were derived.

1. The mean scores of the Grade 8 *History Alive!* group on the Texas Assessment of Knowledge and Skills test were significantly higher than the scores of the control group.

2. The mean scores of the Grade 11 *History Alive!* group on the TAKS exam were not statistically significant when compared to the mean scores of the control group. However, since the Grade 11 TAKS exam assesses knowledge from previous courses, students mean scores reflect more than the study of Grade 11 American history. Approximately one-third of the Grade 11 TAKS exam assesses World Geography and World History. If the Grade 11 students had been assessed only on the American history curriculum, the differences in mean scores may have been statistically significant.

3. Student achievement scores rose significantly according to the *History Alive!* teacher's level-of-use. At both Grades 8 and 11, the mean scores between students taught at the orientation, mechanical, and routine levels were significantly different, suggesting that the more faithful their teacher in designing standards-based lessons and delivering them through inquiry, the greater retention of American history students' knowledge about the subject. Therefore, a comparison of the *History Alive!* group (as an aggregate variable) to the control group (in aggregate) masks a statistically significant difference in student achievement among Grade 11 students.

4. Constructing a level-of–use rubric based upon the Concerns-Base Adoption Model and customizing it to the particular instructional innovation is a useful tool in measuring teacher effectiveness.

Need for Further Study

Additional research is needed in order to fully explore the short- and long-term effects of inquiry-based pedagogy in a standard-based, high-stakes teaching and learning environment. Although this study provides a more comprehensive look at the effects of inquiry-based versus traditional teaching than has been previously conducted, investigations into four additional areas of inquiry-based pedagogy would compliment and extend this study.

1. Since inquiry-based instruction purports to help students attain important historical concepts and to develop critical thinking, student achievement should be measured by instruments other than multiple choice tests. History-based essays, student analyses of primary source documents, and historical analogies should be used to determine the ability of students to apply knowledge of American history to authentic contexts. Future studies that use open-ended assessment instruments should also consider administering a

pre-test to students in the experimental group prior to treatment. Prior skill at essay writing, primary source analysis, and analogical reasoning would then serve as covariates and help isolate the effects of inquiry based instruction on students' historical thinking skills.

2. Measuring the outcomes of an inquiry-based curriculum and professional development program should include a comparison of the pedagogical behaviors and practices of the treatment group teachers, before and after participating in the innovation. Comparing one cohort of teachers (the treatment group) to another cohort of teachers (the control group) introduces a set of variables in teacher knowledge and skill that cannot be controlled through an analysis of student performance. Therefore to control for variances among teachers between the control and treatment groups, compare the treatment group to itself, i.e. student scores of the treatment group after one year of implementation and student scores before they were exposed to the treatment.

3. Changing teacher behavior and practices is a difficult task. Some teachers will embrace an innovative instructional program; others will not. In this study, approximately one-third of the teachers in the History Alive! group implemented the program at an Orientation level – they self-selected the parts of the program they liked and introduced them to their students in a manner that fit their traditional habits. Thus, instructional reform was compromised. Professional educators responsible for nurturing and growing teachers to develop effective practices need to understand why some teachers who willingly apply for, participate in and complete training do not implement with fidelity. What caused some teachers to implement at a routine level, a mechanical level and others not at all? A qualitative study designed to understand this phenomenon would help

professional development personnel ensure that training effectively developed the professional behaviors and practices of all teachers.

This researcher discovered that teachers who trained and implemented *History Alive!* with a co-worker who taught at the same campus implemented the program to a greater extent than teachers who trained and implemented *History Alive!* as the only campus representative. Providing technical assistance to teachers attempting to implement a new instructional program requires on-site and on-demand support. While support was provided the *History Alive!* teachers by an instructional specialist operating at the central office, the teachers who could also rely on a co-worker at their campus had the day-to-day support that encouraged them to work through the issues that periodically surfaced during implementation.

This researcher also worked closely with the campus principals to inform them of the nature of the instructional program, its training components and the central office support provided to participating teachers. The involvement of the principal in sanctioning the program, appearing at professional development sessions and activities, facilitating reflective discussions about its effects on student performance, and monitoring its use through classroom observations were important factors that help explain why some teachers decided to implement and others did not. A study that can determine the relative importance of these factors would help shape the planning and execution of future professional development.

4. Future studies should also be longitudinal – studying how inquiry-based teaching and learning affects the retention and motivation of students and their teachers. In a country that prides itself in being the longest reigning constitutional democracy, established and

prospering through a political and economic system that allows different constituencies to

engage in public debate and influence important social outcomes, it is imperative that our

public schools prepare our youth to enter the debates as productive and responsible

citizens ready to collaborate and apply their knowledge to problems not of their own

making.

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