Fostering Analysis in Historical Inquiry
Through Multimedia Embedded Scaffolding

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This article reports on the findings of a study designed to assess the utility of a multimedia tutorial intended to scaffold the development of historical source analysis through the use of the SCIM strategy. Seventy-seven undergraduate students (29 males, 48 females) with a mean age of 19.4 years engaged in a 2.5-hour tutorial across three instructional episodes. Students were assessed for retention of the SCIM strategy following each instructional episode (posttests 1-3) and assessed for the application of the SCIM strategy both before the instructional episodes (pretest) and following each episode (posttests 1-3). The results indicate that students learned to recall the SCIM strategy well and apply the first three, of four, stages of the SCIM strategy to new historical sources. This study joins a growing body of empirical research designed to examine how digital technologies can support the teaching and learning of the doing of history.

> Using historical investigations to teach critical reading may be one [of] the greatest warrants we can muster for offering history courses in schools… I deliberately sought to teach [the students] the analytic strategies used by historians because of their extensive value in educating thoughtful, reflective young citizens who can detect snake-oil sales spin and reveal a disguised agenda.
>
> (VanSledright, 2002c, p. 153)

VanSledright's efforts to teach children history as an investigative process reflects what Seixas (2000) categorized as a *disciplinary knowledge* orientation and what Barton and Levstik (2004) described as an *analytic stance* toward history. Such an approach stands in direct contrast to the repeatable and recognizable teacher-centered historical narrative presented in today's classrooms that is grounded within and through a "resilient encyclopedic epistemology" (VanSledright, 2002c, p. 144).

The analytic stance advocates a shift toward a more student-centered perspectival history that necessitates the asking of historical questions; the analysis, evaluation and corroboration of historical sources; and the crafting of historical accounts that are grounded and informed by the available source evidence. As the opening quotation illustrates, advocates of the analytic stance purposefully connect the doing of history to the mission of educating citizens who are capable of engaging in the type of critical literacy work required in textually rich societies. However, while the teaching of historical thinking is often represented as an ideal and ambitious approach, the move from theory to practice is difficult and challenging (see Barton & Levstik, 2004). Bain (2000) noted that it is the teacher, who, after reading the literature on "wise practice" is the one left to struggle with such questions as: How can students be assisted in developing a deep understanding of history? How do students develop the capacity to utilize historical sources and establish the significance of evidence as part of the process of learning to think historically?

Similarly, research reveals the challenges facing many teachers who want to create a learning environment that explores the past through inquiry (see Barton & Levstik, 2004; Stearns, Seixas, & Wineburg, 2000). Stumbling blocks include the pressure teachers feel to cover content, often via the textbook, in order to have students ready for the end of year assessments (Gerwin & Visone, 2006; Hicks, 2005); the level of sophisticated disciplinary and procedural knowledge required to teach students how to engage in the doing of history (Fallace, 2007; VanSledright, 2002b); the perceived difficulty and reluctance of students to work closely with sources to develop evidence-based interpretations in favor of making up what they thought happened in the past (Barton, 1997; VanSledright, 2002a, 2002c); and the subsequent ease with which students discard sources to the "biased scrapheap" as an alternative to scrutinizing them in order to answer historical questions (Barton, 2005; Riley, 1999).

Concerns regarding students' (in)abilities to analyze historical sources are far from new. Osborne's (2003) study of Fred Morrow Fling's source method of teaching history at the turn of the 20th century described how Fling consistently faced criticism regarding his assertion that students were more than capable of engaging in source work. Nearly a century later, Barton (1998) was just as encouraging as Fling, when he noted that it is important to see a student's abilities to think historically as "a set of skills educators can nurture, not an ability whose development they must wait for or whose absence they must lament" (p. 54).

This article introduces a multimedia tutorial designed to support the analytic stance in terms of facilitating the development of historical thinking, and reports on the findings of a recent study to assess the utility of this tutorial to scaffold the development of historical inquiry skills and specifically historical source analysis.

The Importance of Teaching and Learning for Historical Inquiry

History is a way of organizing and explaining the past. To inquire historically is to engage in purposeful and reflective mental activities that focus on the strategic exploration of multiple perspectives through the reasoned drawing of inferences, the integration and synthesis of information, the thoughtful evaluation of reliability and perspective, and the mindful generation of possible understandings and interpretations (Baton & Levstik, 2004; Wineburg, 2001). However, one cannot come to fully know history by merely learning grand narratives of the past, or by simply practicing, in isolation, the basic skills of historical interpretation. The danger of learning history in terms of the former is that students can quickly become overwhelmed/bored with a litany of disconnected and often trivial historical facts and details (Counsell, 2000); the danger of learning history in terms of the latter is that students ignore the narrative structure(s) of history through which historical questions are asked and answered (see Pendry, Husbands, Arthur, & Davison, 1998).

In order to overcome this simplistic conceptual distinction between the importance of learning facts and dates, and developing skills, Counsell (2000) posited that the acquisition of historical knowledge is "both the servant and the result of enquiry" (p.70). Teaching and learning history is not purely a matter of telling and being told. If students are to learn to engage in the doing of history, teachers must be capable of explicitly scaffolding the metacognitive strategies and habits of mind required to engage in historical inquiry (see Lee, 2005). Recognizing the importance of scaffolds to support historical thinking is one thing, developing worthwhile and usable scaffolds is another.

Historical Inquiry and Scaffolding

Understanding and developing students' comprehension and application of the process of historical inquiry requires a systematic multidimensional approach. When the study of history moves beyond the memorization of times, places, and people, into interpretations, perspectives, and evidential understanding, we enter "the colliding worlds of history and memory" (Wineburg, 2001, p. 321). One such collision point is scaffolding.

Scaffolding
Scaffolding implies that complex mental activities, such as historical inquiry, that would not otherwise be attainable, may be completed successfully when learners are provided with appropriate assistance (Davis & Miyake, 2004; Wood, Bruner, & Ross, 1974). This assistance, or scaffolding, comes in many forms, including simplifying

and modeling tasks, providing verbal and non-verbal representations of knowledge, and teaching cognitive and metacognitive strategies related to task completion; that is, providing students with the "tools, strategies, and guides which support students in attaining a higher level of understanding" (Brush & Saye, 2002, p. 2). Traditionally, this assistance is viewed as arising from the interactions between a more knowledgeable "other" and a learner or student (Collins, Brown, & Newman, 1989; Vygotsky, 1978). This interaction typically requires a human instructor to control and manipulate the instructional context such that the learner is actively engaged in a challenging task with the support mechanisms necessary to foster development and task success. This traditional view, however, is currently being expanded in light of the increase in computerized instruction to include the role of technology-based scaffolding (Azevedo, Cromley, & Seibert, 2004; Britt, Perfetti, Van Dyke & Gabrys, 2000). Reiser (2004), in examining technologically-based scaffolding, decomposed scaffolding into *structuring*, simplifying complex cognitive tasks in order to make the task more tractable, and *problematizing,* directing learner's attention toward complex issues or characteristics of the task that might otherwise be overlooked.

Structuring. Reiser (2004) explained structuring as follows: "If reasoning is difficult due to complexity or the open-ended nature of the task, then one way to help learners is to use the [technological] tool to reduce complexity and choice" (p. 283). His explanation is in agreement with Wood et al.'s (1974) original concept of reducing the "degrees of freedom" within a task to a more manageable, less complex, number. Reiser (2004) indicated that structuring, within a technologically-rich instructional environment, may include decomposing complex tasks into more manageable chunks, focusing learner effort by restricting the problem space, or guiding learner self-monitoring so that the learner understands his or her own comprehension and progress.

For example, consider a student learning to engage in the process of historical inquiry. Historical inquiry is a complex process involving analyzing individual sources of evidence (e.g., a letter), while simultaneously synthesizing multiple pieces of evidence (e.g., letters, pictures, speeches); developing specific cognitive strategies for interrogating sources of evidence, while simultaneously developing general metacognitive strategies for guiding the interrogation and synthesis processes; and, constructing new knowledge while simultaneously integrating this new knowledge into existing mental models. This process is very open-ended, containing many "degrees of freedom." To facilitate student learning it may be advantageous to scaffold, via structuring, the learning process by reducing its initial complexity. This reduction of complexity may be achieved by providing students with a specific cognitive strategy for analyzing individual historical sources.

Once such strategy is the SCIM strategy (Hicks, Doolittle & Ewing, 2004), that is, summarizing the contents of the source, contextualizing the source within time and place, inferring from the source evidence that is not explicitly available, and monitoring the analysis process for additional questions and materials needed. This structured scaffolding of providing cognitive strategies helps to reduce the complexity of the task, while simultaneously increasing student understanding.

Problematizing. Problematizing refers to focusing a learner's attention on specific aspects of a task that might otherwise be overlooked (Reiser, 2004). Problematizing is in accord with Wood et al.'s (1974) emphasis on the need to explicitly identify and draw attention to critical features of a task. It is important to note that while Reiser's (2004) structuring is designed to simplify a task, problematizing is designed to make sure that learners engage in the necessary complexity within that simplified task. Reiser suggested that problematizing within a technologically-rich instructional environment may include (a) prompting a learner to explicitly articulate his or her current understanding of a concept or process; (b) providing a learner with a restricted and closely related set of knowledge representations that encourage an examination and evaluation of their subtle differences; and (c) creating an environment where self-constructed knowledge representations may clash with external representations, providing an impetus for examining disagreements in interpretation.

For example, consider the previous situation of a student learning to engage in the process of historical inquiry. While the complexity of the process of historical inquiry may be reduced, or structured, through the use of cognitive strategies, it is still necessary for students to engage in some level of task complexity in order for the task to be intellectually authentic. This engagement may be attained through the use of guiding questions focused on complex issues (e.g., What was happening within the immediate and broader context at the time the source was produced? What inferences may be drawn from absences or omissions in the source?), and the requirement that students construct a valid historical interpretation based on the synthesized evidence. This problematized scaffolding of focused questions and interpretation construction should help to guide complex engagement in the task, while simultaneously increasing student understanding.

The concepts of structuring and problematizing, however, are applicable to all scaffolding situations and are not wedded to a technological implementation, an insight brought into focus by Saye and Brush's (2002) concepts of soft and hard scaffolding. Saye and Brush defined *soft scaffolding* as the more traditional person-centered scaffolding where a more knowledgeable "other" monitors a student's progress and provides dynamic support for learning as needed. *Hard scaffolding*, however, was defined as static support structures that are created in ad-

vance that address known and potential student difficulties and which are embedded in the multimedia tool to support student learning.

Based on Saye and Brush's research on soft and hard scaffolding and Reiser's emphasis on structuring and problematizing scaffolding, an interactive, multimedia tutorial, the SCIM-C Historical Inquiry Tutorial, was designed to scaffold students' comprehension of the process and application of historical inquiry was constructed.

The SCIM-C Strategy for Historical Inquiry

Grounded within research on teaching and learning history (Lee, 2005; VanSledright, 2002a, 2002b) and building upon Riley's (1999) layers of inference model to support teaching evidential understanding, the SCIM-C strategy was developed as a scaffold to help students develop the knowledge and skills necessary to interpret and reconcile historical sources as part of the process of investigating meaningful historical questions. The SCIM-C strategy focuses on five overarching phases: Summarizing, Contextualizing, Inferring, Monitoring, and Corroborating. Specifically, as students engage a single source they progress through the first four phases (i.e., summarizing, contextualizing, inferring, and monitoring), and when engaging two or more sources on a single topic, they then use the fifth phase (i.e., corroborating) to compare the sources collectively.

Within each of the five phases there exists a series of four analyzing questions that allow students time to linger and learn from the source(s) in light of the historical question being asked. While individual teachers and students may ask fewer questions than the four suggested or additional questions within each phase, the SCIM-C model should be viewed as an initiating device through which to nurture students' abilities to engage in source analysis. By paying attention to Reiser's (2004) scaffolding framework, the SCIM-C strategy reduces the complexity of historical inquiry by deconstructing historical inquiry into the five phases (structuring), while simultaneously maintaining the complexity of historical inquiry through the asking of the analyzing questions (problematizing). The following sections explain each of the five phases of the SCIM-C strategy, including the four analyzing questions for each phase.

Summarizing
The first phase of the SCIM-C strategy begins with summarizing. Summarizing has been demonstrated to be an effective initial comprehension strategy (Hattie, Biggs, & Purdie, 1996; King, 1992); although research also indicates that students often have difficulty in summarizing (Anderson & Hidi, 1988/1989) and require guidance in learning to summarize (Byrnes, 1996; Hidi & Anderson, 1986). The summarizing phase seeks to support students' attempts to initially

identify obvious details regarding the source, before developing a more careful and thoughtful consideration and analysis of the nature and utility of the source itself (VanSledright & Afflerbach, 2005). That is, students examine what LaCapra (1983) terms the "documentary aspect" of the historical source in order to find evidence that explicitly pertains to their interest or to the guiding question. Within this phase, students attempt to identify the source's subject, author, purpose, and audience, as well as the type of historical source (e.g., letter, photograph, cartoon). The guiding questions also direct students to look for key facts, dates, ideas, opinions, and perspectives that are immediately apparent within the source. The four analyzing questions associated with the summarizing phase are:

1. What type of historical document is the source?
2. What specific information, details, and perspectives does the source provide?
3. What are the subject and purpose of the source?
4. Who are the author and audience of the source?

Contextualizing

The contextualizing phase provides students the opportunity to locate the source within and through time and space. Seixas (1998) contends that engaging in the process of historical inquiry "involves a dynamic interplay among current issues, historical contexts, and historical texts" (p. 314). However, ongoing research illuminates how students often analyze historical sources through present perspectives (Bohan & Davis, 1998; Wineburg, 2001), a tendency that can seduce students into committing what Berkhofer (1995) contends is the "greatest historiographical sin"- anachronism (p. 32). The contextualizing phase seeks to help students recognize that the meanings, values, habits, and customs of the period that are presented within sources may be very different from those of today. The four analyzing questions associated with the contextualizing phase are:

1. When and where was the source produced?
2. Why was the source produced?
3. What was happening within the immediate and broader context at the time the source was produced?
4. What summarizing information can place the source in time and place?

Inferring

The inferring stage requires students to build upon the initial facts and perspectives gleaned from the previous phases. The inferring phase encourages the move toward reading subtexts and making inferences

based upon a developing understanding of the context of the source in light of the historical question. The discipline of history is an inferential discipline. LaCapra's (1983) recognition of the "documentary" and "work-like" aspects of historical texts illuminates the necessity of inferring as part of the doing of history. The work-like aspect of the text recognizes the source as more than a simple account of the event being studied, but actually as part of the event. The source becomes the medium through which the historian makes inferences in order to construct and reconstruct the historical context from which the source was created. The inferring stage recognizes history as a "shifting discourse constructed by historians" where no one reading of the past based on the available sources is guaranteed – "change the gaze, shift the perspective and new readings appear" (Jenkins, 1991, p. 13-14). The inferring stage allows students to stay with the source and more thoughtfully unpack the source. The four analyzing questions associated with the inferring phase are:

1. What is suggested by the source?
2. What interpretations may be drawn from the source?
3. What perspectives or points of view are indicated in the source?
4. What inferences may be drawn from absences or omissions in the source?

Monitoring

The monitoring phase recognizes the importance of teaching students how to explicitly think about their own meaning making as part of the process of learning to engage in the processes of historical inquiry. Monitoring is designed to make transparent students' abilities to work with key second-order concepts such as evidence, context, account status, and author perspective that are the procedural building blocks upon which historians rely as they craft historical accounts (VanSledright & Limón, 2006). Specifically, monitoring demands reflection upon the use of the strategy, reflection about the questions being asked, and reflection upon the source itself (Davidson & Sternberg, 1998; Wolters & Pintrich, 2001). The four analyzing questions associated with the monitoring phase are:

1. What additional evidence beyond the source is necessary to answer the historical question?
2. What ideas, images, or terms need further defining from the source?
3. How useful or significant is the source for its intended purpose in answering the historical question?
4. What questions from the previous stages need to be revisited in order to analyze the source satisfactorily?

Corroborating

The corroborating phase is initiated when students have analyzed more than one source and are ready to extend and deepen their analysis by comparing the evidence in light of the guiding historical questions. Corroborating information across multiple sources adds an increased layer of complexity that is missing during the analysis of a single source (Britt et al., 2000). While there is a danger that students will simply ignore their initial analysis of individual sources in the development of an historical account (see Barton, 1997; Barton & Levstik, 2004), work at both the elementary (VanSledright, 2002c) and secondary levels (Bain, 2000) reveals that students can be taught to work with contrasting sources and develop historical interpretations. Corroboration requires examining the similarities and differences in ideas, information, and perspectives that exist between the analyzed sources. Students need to be ready, willing, and able to examine contradictory sources of evidence, examine the credibility of the source, and identify gaps in the evidence that may hinder their developing account. Corroboration within and across sources allows students to begin to develop an interpretation based upon the synthesis of the evidence at hand. The four analyzing questions associated with the corroborating phase are:

1. What similarities and differences between the sources exist?
2. What factors could account for these similarities and differences?
3. What conclusions can be drawn from the accumulated interpretations?
4. What additional information or sources are necessary to answer more fully the guiding historical question?

The SCIM-C strategy's utility lies in the recognition that it provides a point of entry and a structured and problematized scaffold through which to teach and learn historical inquiry. The overall process of moving through the phases of the SCIM-C strategy should be viewed as a recursive and thoughtful approach to historical inquiry; it is an approach that requires a concerted level of engagement with each source in order to investigate historical questions through analyzing sources deeply, thoroughly, and carefully. The ultimate goal of the SCIM-C strategy is for students to become self-regulated in the use of the strategy as part of the process of doing history. In pursuit of this goal a multimedia tool for teachers and students that facilitates the use of the SCIM-C strategy for historical inquiry was developed. Our decision to develop an online tutorial was based upon a recognition of the difficulties facing teachers and their students with regard to the teaching and learning of historical source analysis, and the abilities

afforded by the Internet to design intact modules/tutorials that can succinctly package and deliver key disciplinary content knowledge, model expert strategies, and provide individual student feedback in an efficient and cost-effective way to multiple teachers, students, and classrooms.

The SCIM-C Historical Inquiry Tutorial

The SCIM-C Historical Inquiry Tutorial was designed as a freely accessible web-based tool to assist teachers and students in developing historical thinking skills (see http://www.historicalinquiry.com). In designing the tutorial our purpose was to "de-emphasize the notion that scaffolding is a layer of supportive features that lies on top of software" (Quintana et al., 2004, p. 341) and emphasize the embedding of hard scaffolding within the software (Saye & Brush, 2002, 2005). It is important to point out, however, that the tutorial was *not* designed to replace teacher-student interaction, nor was it designed to subsume the teacher's instructional role. Rather, the tutorial is a temporary introductory support structure. As Goffman (1959) said, "scaffolds after all, are to build other things with, and should be erected with an eye to taking them down" (p. 254).

A Brief Overview
The tutorial was created using Adobe's Flash™ and involves narrated instructional multimedia. The following descriptions of the tutorial are based on the analysis of a single historical source, thus the fifth phase, corroborating, which requires the analysis of multiple sources, is *not* demonstrated. Previous research has examined how students have worked with multiple historical sources as part of the process of engaging in historical inquiry in technology rich environments (see Saye & Brush, 2007). However, making the leap to investigating how students work with multiple historical sources overlooks the difficulties and challenges students face in appropriately analyzing a single historical source. In response, our efforts seek to rescale and conduct research in terms of examining how students successfully utilize the strategy to analyze individual historical sources as opposed to working with multiple sources using the full SCIM-C strategy. Therefore, the SCIM-C strategy will henceforth be referred to as the SCIM strategy when describing the tutorial and reporting on the study.

The tutorial itself is comprised of three 30-minute sessions involving three instructional sections: strategy explanation, strategy demonstration, and strategy participation (see Appendix A). The *strategy explanation* section is designed as a direct explanation of historical inquiry and the SCIM strategy, the *strategy demonstration* section provides analyses of primary sources based on the transcripts of a historian's

SCIM analyses, and the *strategy participation* section provides the user with practice in analyzing primary sources, based on the SCIM strategy, with explicit feedback.

Strategy Explanation

The SCIM tutorial begins by introducing students to the characteristics, processes, and goals of historical inquiry. The tutorial provides an explanation of the broad picture of historical inquiry as a process that starts with the asking of *historical questions*. These questions are then addressed by locating and analyzing *historical sources* in pursuit of *historical evidence*. Finally, this historical evidence is used to construct an *historical interpretation* relevant to a guiding historical question. The guiding historical question posed by the tutorial to introduce the processes of historical inquiry is: *What was the significance of the Space Race during the 1960s?*

Exploration of this guiding historical question moves from the broad picture of historical inquiry to a specific strategy for engaging primary sources – the SCIM strategy. The SCIM strategy is illuminated through the use of a letter from President Kennedy to Vice President Johnson, written in 1961. The letter serves as a tangible artifact and focus of attention as the SCIM strategy unfolds. The first phase of the SCIM strategy, *summarizing*, is explained and demonstrated by highlighting the letter's author, recipient, and purpose, as well as additional specific and readily available details. This highlighting of relevant information is then followed by the presentation of the four analyzing questions of the summarizing phase. Highlighting, or signaling (Mayer, 2005), serves as a scaffold to focus the student's attention on the relevant historical evidence within the letter as the narration unfolds, providing a first glimpse into understanding the letter.

The second phase, *contextualizing*, is explained and demonstrated by first highlighting when, where, and why the letter was produced. Following this highlighting, the letter is then spatially oriented to both a timeline of the Cold War and a timeline of the U.S.-Soviet space race to demonstrate the immediate and broader context in which the letter was produced. This highlighting and spatial representation is then followed by the presentation of the four analyzing questions of the contextualizing phase. This highlighting, again, serves as a focusing scaffold, while the spatial representation reduces the complexity of locating the letter in time.

The third phase, *inferring*, is explained and demonstrated by first highlighting relevant information within the letter. This highlighting makes clear that inferential evidence arises from the source itself and is not simply ungrounded opinion. The relevant information is then extracted from the letter and placed in boxes titled "Evidence from the Source." This evidence is then integrated to create new inferential

evidence and placed in a box titled "Inference." This highlighting, extracting, and integrating are followed by the presentation of the four analyzing questions of the inferring phase. As before, highlighting serves as a focusing scaffold while extracting and integrating serve as a model for the complex process of inferring.

The fourth phase, *monitoring*, is explained and demonstrated by providing relevant questions that may emerge from analyzing the letter. These example questions are followed by the presentation of the four analyzing questions of the monitoring phase. This final phase of the tutorial encourages reflection on the first three phases for the purpose of re-examining current understandings and initial assumptions in relation to the letter, the generated evidence, and the guiding historical question.

Strategy Demonstration

To fully understand and apply the SCIM strategy, experience is needed beyond an explanation of the strategy; one must also view models using the strategy and then engage in explicit practice, with feedback (Collins Block & Pressley, 2002). In the second section of the SCIM tutorial opportunities are provided to observe historians analyzing sources using the SCIM strategy. A key to the strategy demonstration section is that it is built upon transcripts of a historian analyzing primary source letters, such as a 1939 letter written by Bobby Murray, a 15-year old boy, to the Children's Bureau of the Department of Labor, Washington, DC, requesting financial assistance. The historian analyzes the letter in light of the guiding historical question: *What was the life of a child like during the Depression?*

Procedurally, the strategy demonstration section mirrors the strategy explanation section; that is, the strategy demonstration involves a narrator cycling through the four phases of the SCIM strategy focusing on the complexity of historical inquiry through the explicit use of each phase's analyzing questions. During this narration, relevant analyzing questions and evidence from the letter are highlighted and/or extracted and combined to form evidence, as was demonstrated during the strategy explanation. A feature unique to the strategy demonstration is the inclusion of completed interpretations. This demonstration process thus involves three crucial components: analyses of letters, demonstrations of the processes involved in implementing the SCIM strategy, and illustrations of the reflective processes of the historian relative to analyzing the letter using the SCIM strategy.

Strategy Participation

The third section of the SCIM tutorial involves extensive user practice in analyzing primary sources with explicit feedback based on the user's responses. During the strategy participation section the

user is asked to read a letter and to respond to identification and interpretation questions based upon the four SCIM phases. The first type of question, *identification*, focuses on identifying explicit summary statements, one-dimensional contextualizing statements, obvious inferential statements, and superficial monitoring questions. The second type of question, *interpretation*, provides in-depth interpretive statements from which the user must determine the *best* answer through analyzing the source, synthesizing the information, and evaluating the evidence. Upon answering a given question, the student is provided with feedback, including the correctness of the response, an explanation of why a particular response is correct or incorrect, a highlighting of relevant passages within the letter, and an explanation of specific aspects of the SCIM strategy to which the student should pay particular attention.

The explanation, demonstration, and participation sections of the SCIM tutorial provide the student with experiences that include structured and problematized scaffolding from which to construct the meaningful knowledge and skills necessary to engage in the doing of history. These experiences combine to create a sophisticated learning environment that uses technology as a learning scaffold, and fosters active engagement by students and the building of viable strategies for the "doing" of historical inquiry. Once the SCIM tutorial was created, a central question remained: Would engagement in the tutorial foster significant learning of the process of historical inquiry, specifically, historical source analysis?

Methodology

Overview

The present study was designed to answer a fundamental question: Does the SCIM Historical Inquiry Tutorial foster the development of historical source analysis? This basic question was subdivided into two related questions: Can participants recall the basic processes of the SCIM historical inquiry strategy (recall)? Can participants apply the SCIM historical inquiry strategy to a historical source (application)?

Participants

Participants were 77 undergraduate students enrolled in a general studies health education course at a large public university in the mid-Atlantic region. The participants included 29 males and 48 females with a mean age of 19.4 years (SD = 1.20; range = 18-29 years). The ethnic breakdown within the sample included 71% White, 14.5% Black, 6.5% Asian, 1.8% Hispanic, and 2.5% Multiracial. Students from the general studies health education course, a course for non-health education majors. were selected to represent a broad range of students unfamiliar with historical inquiry methods.

Materials

The SCIM Historical Inquiry Tutorial. The tutorial is an interactive, multimedia instructional program designed to scaffold students' learning of the SCIM strategy for historical inquiry (see Hicks, Doolittle, & Ewing, 2004). The tutorial consists of three sections, strategy explanation, strategy demonstration, and strategy participation distributed across three 30-minute segments (see previous discussion of the tutorial).

Strategy recall test and scoring. Participants' recall of the SCIM historical inquiry strategy was assessed using a single open-ended question: "Please identify, define and describe the SCIM strategy." A trained scorer evaluated each response with no knowledge of which session the response originated. For each of the four SCIM phases, one point was awarded for mentioning each of the SCIM phases (4 points), one point for defining each of the SCIM phases (4 points), and one point for mentioning at least one of the analyzing questions for each of the SCIM phases (4 points; see Appendix B for an example). Raters were instructed to focus on the meaning of responses and not search for exact wording. The maximum score for each recall test was 12.

Strategy application test and scoring. Each participant's ability to analyze a historical source letter and write an interpretation based on a historical question was assessed prior to beginning the SCIM tutorial (Pretest) and after each engagement with the SCIM tutorial (Posttest 1, Posttest 2, Posttest 3). Each strategy application test consisted of participants reading a historical letter on the computer screen and then writing a historical interpretation based on a historical question. The participant's interpretation was written in a text box on the computer screen. Therefore, over the course of the study, participants read, analyzed, and created a historical interpretation for four historical letters. In each case, participants were asked to use the letter to address a historical question. Specifically, letter A addressed life during the Great Depression and participants were asked to answer the question: "What does this source tell us about what the life of a boy was like during the Depression?" Letter B addressed farming in the early 20th century in the Midwestern United States and participants were instructed to address the question, "What does this source reveal about the conditions of life in farming communities on the great plains during the early 20th century?" Letter C focused on the life of a volunteer in the Spanish-American war. Participants were asked to answer the question: "What does this source reveal about the conditions of life for a volunteer in the Spanish-American war?" Letter D addressed views on women's rights in the 1850s and participants were instructed to write in response to the question, "What does this source reveal about nineteenth century views on women's rights?"

Two raters were trained to evaluate responses based upon the application of a scoring rubric (see Appendix C). This scoring rubric

was constructed by a historian, a teacher educator, an educational psychologist, and a high school social studies teacher. Each response was scored by both raters with no knowledge of the session from which the response originated. All disagreements between raters were settled through direct discussion. A maximum of 16 points was available such that four points were possible for each of the four SCIM phases (see Appendix C). Interrater reliability, Cohen's Kappa = .88, was determined by comparing the raters' responses (yes or no) to the 12 scoring rubric questions (see Appendix C) across all participants. Cohen's Kappa ranges from 0.0 (agreement is no better than chance) to 1.0 (exact agreement), and is appropriate for measuring interrater reliability for categorical data.

Procedure

Participants were tested individually in groups of 1-6 students per session, across three days during a single week. On the first day, participants completed a demographics questionnaire and the strategy application pretest. Following the completion of these tasks, the experimenter provided participants with oral instructions explaining that they would be engaging in a tutorial explaining and demonstrating the process of historical inquiry. Participants then engaged in the first 30-minute segment of the multimedia tutorial. Following engagement in the SCIM tutorial, participants were given 10 minutes to complete the first strategy recall posttest and 15 minutes to complete the first strategy application posttest. On the second and third days of the study, participants were again given brief instructions and then completed (a) a SCIM tutorial session, (b) a strategy recall posttest, and (c) a strategy application posttest. Participants were given 10 minutes to complete each strategy recall test and 15 minutes to complete each strategy application test. Finally, the order of the four letters for the four strategy application tests was randomly assigned for each participant.

Results

Participants engaged in SCIM strategy instruction across three days, one instructional episode per day. Participants' ability to recall the SCIM strategy was assessed following each of the three instructional episodes, while participants' ability to apply the SCIM strategy was assessed prior to the first instructional episode and then after each of the three instructional episodes.

Recall of the SCIM strategy. The three sets of SCIM posttest recall scores (i.e., recall posttest 1, recall posttest 2, recall posttest 3) were analyzed using a one-way, within-subjects ANOVA with Greenhouse-Geisser correction. This ANOVA yielded a significant main effect for recall posttest, $F(2,152) = 13.52$, partial $\eta^2 = 0.15$, $p = .00$. A subsequent

Bonferroni post-hoc test indicated that the mean recall posttest 1 score was significantly lower (M = 8.49; SD = 3.57) than the mean recall post-test 2 score (M = 10.04; SD = 2.86) and posttest 3 score (M = 10.10; SD = 2.87). There was no significant difference between mean recall posttest 2 and posttest 3 scores.

A subsequent, and more detailed, analysis was conducted in order to explore the possible existence of differences in recall based on the four phases of the SCIM strategy, a 4 (S-C-I-M phase) X 3 (posttest) within-subjects ANOVA, with Greenhouse-Geisser correction. A phase recall score was computed for each of the four SCIM phases: one point was awarded for *mentioning* the SCIM phase, one point was awarded for *defining* the SCIM phase, and one point was awarded for mentioning at least one of the *analyzing questions* for the SCIM phase (see Table 1). This phase recall score represented each participant's recall of each of the four SCIM phases. The ANOVA yielded a significant main effect for recall posttest, $F(2,608) = 28.89$, partial $\eta^2 = 0.08$, $p = .00$; a non-significant main effect for S-C-I-M phase, $F(3,304) = 1.08$, partial $\eta^2 = 0.01$, $p = .35$; and a non-significant interaction effect, $F(6,608) = 0.45$, partial $\eta^2 = 0.00$, $p = .82$. A subsequent Bonferroni post-hoc test was conducted to examine the significant recall posttest results. The post-hoc test simply verified the previous finding that the mean recall posttest 1 score was significantly lower than the mean recall posttest 2 and posttest 3 scores, and that there was no significant difference between the mean recall posttest 2 and posttest 3 scores.

Application of the SCIM strategy. The SCIM pretest application scores and the three sets of SCIM posttest application scores (i.e., application posttest 1, application posttest 2, application posttest 3) were analyzed using a one-way, within-subjects ANOVA, with Greenhouse-Geisser correction. This ANOVA yielded a significant main effect for application posttest, $F(3,228) = 86.30$, partial $\eta^2 = 0.53$, $p = .00$. A subsequent Bonferroni post-hoc test indicated that the mean application pretest score (M = 3.00; SD = 1.51) was significantly less than all three

Table 1. *Means and Standard Deviations of SCIM Strategy Recall Posttest Scores by SCIM Phase*

Phases	Posttest 1 M	SD	Posttest 2 M	SD	Posttest 3 M	SD	Total M	SD
Summarizing	2.27	0.98	2.55	0.82	2.52	0.82	2.44	0.88
Contextualizing	2.01	1.11	2.42	0.80	2.30	0.85	2.24	0.92
Inferring	2.13	1.03	2.49	0.75	2.47	0.83	2.36	0.90
Monitoring	2.08	1.02	2.58	0.76	2.45	0.85	2.37	0.90
Total:	2.12	1.03	2.51	0.78	2.44	0.84		

Note. Max score = 3; N = 77.

mean application posttest scores and that the mean application post-test 1 score (M = 6.25; SD = 2.66) was significantly less than the mean application posttest 2 (M = 7.08; SD = 2.78) and posttest 3 scores (M = 7.10; SD = 2.67). There was no significant difference between mean application posttest 2 and posttest 3 scores.

A subsequent, and more detailed, analysis was conducted in order to explore the possible existence of differences in the application of the four phases of the SCIM strategy, a 4 (S-C-I-M phase) X 4 (pre/posttests) within-subjects ANOVA, with Greenhouse-Geisser correction. A phase application score was computed for each SCIM phase for each participant (see Table 2) based on whether the participant addressed the application scoring rubric questions (see Appendix C). This score represented each participant's ability to apply each of the SCIM phases. The ANOVA yielded a significant main effect for application pre/posttest, $F(3,912)$ = 125.74, partial η^2 = 0.29, p = .00; a significant main effect for S-C-I-M phase, $F(3,304)$ = 181.53, partial η^2 = 0.64, p = .00; and a significant inter-

Table 2. *Means and Standard Deviations of SCIM Strategy Application Scores by SCIM Phase*

	Pretest		Posttest 1		Posttest 2		Posttest 3		Total	
Phases	M	SD	M	SD	M	SD	M	SD	M	SD
Summarizing	1.71	0.60	2.95	0.85	3.19	0.93	2.97	0.90	2.70	0.61
Contextualizing	0.25	0.54	1.56	1.23	1.75	1.25	1.73	1.35	1.32	1.09
Inferring	1.04	1.00	1.40	0.92	1.74	0.88	1.77	0.85	1.48	0.90
Monitoring	0.00	0.00	0.34	0.75	0.39	0.79	0.49	0.86	0.30	0.59
Total:	0.75	0.93	1.56	1.33	1.77	1.39	1.74	1.34		

Note. Max score = 4; N = 77.

action effect for S-C-I-M phase x pre/posttest, $F(9,912)$ = 9.84, partial η^2 = 0.08, p = .00. A subsequent Bonferroni post-hoc test on the application pre/posttest main effect indicated that the mean application pretest score was significantly less than the three mean application posttest scores and that the mean application posttest 1 score was significantly less than the mean application posttest 2 and posttest 3 scores. A subsequent Tukey post-hoc test on the S-C-I-M phase main effect indicated that participants scored significantly higher on the inclusion of summarizing information in comparison to all other SCIM phases, and significantly lower on the inclusion of monitoring information in comparison to all other SCIM phases. The significant interaction effect was caused by a slight interaction between the data for contextualizing and inferring.

Breakdown of the SCIM strategy. A descriptive analysis of participants' strategy application responses was conducted to determine which criteria of the strategy application scoring rubric participants received credit (see Table 3). This analysis simply tallied the number of participants who received credit for each of the scoring rubric criteria (i.e., analyzing questions) for each of the strategy application tests

(i.e., pretest, posttest 1, posttest 2, posttest 3). This descriptive analysis provides insight into the components of the SCIM strategy with which students were most adept.

Table 3. *Strategy Application Scoring Rubric and Total Number of Participants Receiving Credit for each Criterion*

Scoring Rubric Criterion	Participants Receiving Points for Criterion Inclusion (N=77)			
	Pretest	Posttest 1	Posttest 2	Posttest 3
Summarizing (1 point each)				
1. Does the response indicate the subject of the source?	50	73	75	72
2. Does the response indicate the audience for the source?	0	25	44	27
3. Does the response indicate the author of the source?	5	51	49	50
4. Does the response include specific details from the source?	76	77	77	77
Contextualizing (1 point each)				
1. Does the response indicate when the source was produced?	4	37	32	38
2. Does the response indicate where the source was produced?	1	17	29	36
3. Does the response indicate why the source was produced?	6	24	24	20
4. Does the response indicate the immediate or broader context?	8	42	49	36
Inferring (2 points each)				
1. Does the response include explicit and/ or implicit inferences?	39	53	63	64
2. Does the response include inferences based on omissions?	0	0	3	3
Monitoring (2 points each)				
1. Does the response indicate the need for information beyond the source?	0	13	13	18
2. Does the response evaluate the usefulness or significance of the source?	0	0	1	0

Discussion and Conclusions

It is all too easy to talk about the need for teachers to teach and students to learn the doing of history. However, research reveals the difficulties facing teachers in terms of developing "historiographical knowledge" and subsequently transforming and infusing this knowledge into their teaching (see Fallace, 2007). Few examples regarding how to scaffold the epistemological shift toward fostering inquiry and historical thinking within classrooms are readily apparent and available. The purpose of the present research was to determine the viability

of one such scaffold, the SCIM Historical Inquiry Tutorial, in terms of fostering the *recall* and *application* of the SCIM strategy for historical inquiry. The results of the study indicate that students who engaged in the tutorial learned to recall the SCIM strategy well and learned to recall each phase of the strategy equally. The results also demonstrate that students learned, if somewhat unevenly, to apply the first three key stages of the SCIM strategy to new historical sources. The multimedia tutorial's ability to scaffold the analysis of historical sources is intricately informed by a recognition that "for learners to develop deep understandings of first order ideas, the study of second order concepts, thinking abilities, and domain specific procedural knowledge appears to be required" (VanSledright & Limón, 2006, p. 548), and that history involves the analysis of sources of evidence as part of the process of developing accounts of the past. Such an understanding is vital if history is to have any utility within and beyond the walls of the classroom.

The current study illustrates that students' application of the SCIM strategy was uneven across the four phases of the strategy (see Table 3). Students learned to include summarizations of the historical sources in their source interpretations. Students' ability to include the subject (94%), author (65%), and audience (48%) of the source, as well as specific details from the source (100%) was encouraging. What is also evident from Table 3 is that students included inferential evidence within their source interpretations. That is, students "include[d] explicit and/or implicit inferences" in their source interpretations more than 80% of the time; however, students only "include[d] inferences based on omissions" less than 3% of the time. In addition, while students generally included summarizations and inferences in their source interpretations, they increased their inclusion of contextualizing information in their source interpretations from less than 5% to more than 40%. One area in which students generally struggled was in explicitly demonstrating monitoring; specifically, the "need for information beyond the source" (20%) and "evaluat[ing] the usefulness or significance of the source" (0%).

The results also indicate that participants who engaged in the SCIM tutorial learned to apply the first three steps in the SCIM strategy as part of the cognitively sophisticated process of source analysis. The value of Table 3 lies in its ability to inform future teacher practice and the development of the SCIM tutorial as to the types of sophisticated thinking that students have developed, as well as those most in need of support and attention. Demonstrating the ability to work with a historical source in terms of summarizing, inferring and contextualizing is key in learning the doing of history. Using a scaffold that supports such a sophisticated reading of historical sources can serve as an important component in supporting the development of teachers' sense of pedagogical authority and awareness as they rethink the types of instruction required to foster historical thinking.

Beyond summarizing, contextualizing, and inferring, it is interesting to see little, if any, explicit monitoring by participants as they engaged with each historical source. However, this does not necessarily mean that the participants did not engage in monitoring. Rather, they simply did not reference this part of the strategy as they constructed their accounts within the study. Trying to assess complex cognitive and metacognitive processes is inherently challenging and requires a significant fidelity in measurement and evaluation. The rubric was constructed only to capture evidence of monitoring as part of participants' historical interpretation. In hindsight, this may have been an artificial expectation, especially when the tutorial itself explicitly recognizes that monitoring occurs recursively throughout the source analysis process and is not simply an end stage that must be included in an account. Clearly there is a need to revisit how to capture participants' abilities to monitor their thinking as they move through the tutorial and use SCIM to scaffold their approach to source analysis. Future data collection must include both participant think-alouds as they engage in source analysis, and follow-up interviews that ask participants to reflect upon their approach to source analysis in light of the SCIM strategy. Such a finding, however, does not detract from the utility of the SCIM tutorial to help scaffold the teaching and learning of source analysis.

Further research is needed to build upon our initial efforts in terms of revisiting and evaluating the utility of the analyzing questions within each phase and the role they play in scaffolding source analysis. Another important direction for research includes examining the utility of the SCIM Historical Inquiry Tutorial with differing populations including preservice and inservice teachers and also secondary school students. In addition, extending the research to examine how the SCIM strategy facilitates the transfer of participants' abilities to analyze various forms of historical sources beyond simple texts (e.g., images, movies, speeches) will be a worthwhile line of inquiry. Such work would lay a sound foundation for then examining how the full SCIM-C strategy can support the analysis of multiple historical sources.

This study joins a small but growing body of empirical research designed to examine how digital technologies can support the teaching and learning of the doing of history (Britt et al., 2000; Saye & Brush, 1999, 2002, 2005, 2007). Much of this research has sought to examine how multimedia tools can broadly scaffold the analysis of multiple historical sources as part of the process of engaging in problem-based/ historical inquiry (Saye & Brush, 2002, 2007). However, it is important to recognize the level of cognitive sophistication required to unpack just one historical source, never mind multiple sources. Thus, this study deliberately took a tighter, more bounded approach to scaffolding historical inquiry by examining progression within one discrete stage of the historical inquiry process. Learning to analyze one specific

historical source does not mean a student will be able to engage in the doing of history. However, developing the cognitive and metacognitive strategies that are specifically designed to help a student analyze one historical source and to carefully and reflectively sift through the "layers of inference" of a historical source is a vital foundation from which to work with multiple sources and the corroboration of evidence in order to develop knowledge of the past. Nuthall (2000) suggests that "facilitating student use of a variety of different language and activity structures through a variety of different media and using a variety of different tools may be the best way to have a deep and lasting effect on how students acquire and use their knowledge" (p. 301). The development of the SCIM Historical Inquiry Tutorial represents one attempt to provide the activity structures and language necessary to help scaffold the teaching and learning of the historical inquiry process by providing both teachers and students with opportunities to think about their own learning as they work with historical sources. Our work illuminates both the potential of digital technologies to support wise practice in 21st century classrooms, and the utility of research-based instructional scaffolds to facilitate the type of systematic critical literacy work that is a vital part of preparing young citizens to become thoughtful and nuanced readers of the word and the world, both past and present.

Appendix A

SCIM Historical Inquiry Tutorial Content Overview

Participants in the present study engaged in the SCIM Historical Inquiry Tutorial across three days. The following represents a brief content overview of the knowledge and processes in which the participants engaged each of the three days.

Day 1
Strategy Explanation (15 minutes)
- Explicit explanation of the process of historical inquiry.
- Explicit explanation of the SCIM strategy for historical source analysis.
  - Summarizing, Contextualizing, Inferring, Monitoring
  - SCIM process explained using letter from President Kennedy to Vice President Johnson (1961).
    - **Guiding question**: What was the significance of the space race during the 1960s?

Strategy Demonstration (15 minutes)
- Historian models the use of the SCIM strategy.
  - SCIM process modeled using letter from Bobby Murray to the Department of Labor (1939).
    - **Guiding Question**: What was the life of a child like during the Great Depression?
- Historian models the construction of an historical interpretation based upon guiding question and analysis of source.

Day 2
Strategy Explanation (10 minutes)
- Brief overview of the process of historical inquiry.
- Brief overview of SCIM strategy for historical source analysis.

Strategy Demonstration (20 minutes)
- Historian models the use of the SCIM strategy.
  - SCIM process modeled using letter from George Washington to Benjamin Tallmadge (1779).
    - **Guiding Question**: What was the role of spies during the American Revolutionary War?
- Historian models the construction of an historical interpretation based upon guiding question and analysis of source .

Strategy Participation (10 minutes)
- Participants complete four identification questions with explicit feedback based upon the George Washington letter.

Day 3
Strategy Explanation (5 minutes)
- Brief overview of SCIM strategy for historical source analysis.

Strategy Participation (30 minutes)
- Participants read a letter from Bobby Murray to the Department of Labor (1939).
  - **Guiding Question**: What was the life of a child like during the Great Depression?
- Participants complete four identification questions based upon the Bobby Murray letter.

- Explicit feedback provided based on participant's response.
- Participant must provide the correct response before progressing to the next question.
  - Participants complete four interpretation questions based upon the Bobby Murray letter.
    - Explicit feedback provided based on participant's response.
    - Participant must provide the correct response before progressing to the next question.

Appendix B

Evaluation of Participant's Recall Using the Strategy Instruction Scoring Rubric

The following represents an evaluation of a participant's response according to the Strategy Instruction Scoring Rubric for recall. A trained scorer evaluated each response according to the following rubric:
- one point for mentioning each SCIM phase (4 points possible),
- one point for defining each SCIM phase (4 points possible), and
- one point for listing at least one of the analyzing questions within each SCIM phase (4 points possible)

Thus, there were a total of 12 points possible for each response.

Participant #1 Response:

The SCIM strategy is a simple list that a person can go through to ensure that a historical source is relevant and gives answers to a historical question. The process starts off with Summarizing. During this, a person will get the basic and obvious facts about the source. What kind is it, who is the author, who is audience, and when was it made. Next is Contextualizing. In this stage, a person puts the letter in context, that is gets a broad idea of what the current situation was at the time the source was produced. After that comes Inferring, when a person will analyze the source, looking for specific references in the source that highlight the importance of certain ideas or beliefs. It is pretty self explanatory, what is the source inferring. Last is the Monitoring stage. For this, a person lists questions they have that would help them better understand the source in order to better answer the historical question.

Participant #1 Scoring:

The participant received one point for mentioning each of the four phases of the SCIM strategy. The participant also received one point for explaining the summarizing phase ("During this, a person will get the basic and obvious facts about the source."), explaining the contextualizing phase ("In this stage, a person puts the letter in context, that is gets a broad idea of what the current situation was at the time the source was produced."), and explaining the monitoring phase ("For this, a person lists questions they have that would help them better understand the source in order to better answer the historical question."). Finally, the participant received one point for listing key questions from the summarizing phase ("What kind is it, who is the author, who is audience, and when was it made."). The participant did not receive any points for explaining the inferring phase ("when a person will analyze the source, looking for specific references in the source that highlight the importance of certain ideas or beliefs"), nor for providing analyzing questions for the contextualizing, inferring or monitoring phases, as none were provided.

Total Score: 8 points = 4 (mentioning phases) + 3 (defining phases) + 1 (phase questions)

Appendix C

The Strategy Application Scoring Rubric

Scoring Rubric Criterion
Summarizing (1 point each)
1. Does the response indicate the subject of the source?
2. Does the response indicate the audience for the source?
3. Does the response indicate the author of the source?
4. Does the response include specific details from the source?
Contextualizing (1 point each)
1. Does the response indicate when the source was produced?
2. Does the response indicate where the source was produced?
3. Does the response indicate why the source was produced?
4. Does the response indicate the immediate or broader context?
Inferring (2 points each)
1. Does the response include explicit and/or implicit inferences?
2. Does the response include inferences based on omissions?
Monitoring (2 points each)
1. Does the response indicate the need for information beyond the source?
2. Does the response evaluate the usefulness or significance of the source?

Note: Total possible score = 16.

Notes

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