

ABSTRACT

Title of Document: STUDYING EPISTEMIC COGNITION IN THE
HISTORY CLASSROOM: CASES OF TEACHING
AND LEARNING TO THINK HISTORICALLY

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Building on the literature on epistemic cognition, epistemic beliefs, and historical thinking, three class-level case studies were conducted to investigate features of historical thinking and history-specific epistemic beliefs of high-school students and their teachers. These cases also considered teachers' pedagogical practices and the potential effects of those practices on students' historical thinking and epistemic beliefs. Two junior honors and one freshman US History classes were selected from a school system that fostered the preparation of students for AP History courses by encouraging the use of a variety of primary sources and analysis of documents in teaching history. Preliminary visits indicated that these classes' teachers used different pedagogical practices. Class observations spanned one semester of instruction. History-specific epistemic beliefs were explored using interviews structured around the items of the Beliefs about History Questionnaire (BHQ) and

historical thinking was assessed through analysis of think-alouds collected while student informants (4 from each class) and their teachers read a set of 6 documents and responded to a constructed response task (CRT). Specifically, student data were collected at the middle and end of the semester, while teachers were interviewed only once, at the end of the semester. In one of the junior classes, 27 additional juniors responded in writing to the BHQ and to the CRTs. Additional questionnaires and interviews explored teachers' goals, rationales for their practice, and interest in history. In regard to history-specific epistemic beliefs, results indicated that students and teachers manifested ideas indicative of different developmental levels, suggesting that their epistemic beliefs are a complex system, not necessarily characterized by a high level of integration. Differences across students tended to be greater in regard to epistemic beliefs than to historical thinking. In addition, comparison of initial and follow-up data suggested different trajectories of change in regard to students' epistemic beliefs while changes in historical thinking were modest and not consistently suggesting progression in competence. These trends were confirmed by the analysis of students' written responses to the BHQ and the CRTs. The study identified a set of ideas and behaviors that tended to produce cognitive impasse and hindered the development of historical thinking and a series of pedagogical practices, mostly aligned with teachers' goals and beliefs, which might have fostered such outcomes.

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TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.....	1
Statement of the Problem and Its Significance.....	2
Clarifications.....	5
Purpose of the Study.....	7
The Case for History.....	11
Focus of the Study.....	17
Research Questions.....	20
Theoretical Model.....	20
Teacher and Student History-specific Epistemic Stances.....	20
Teacher Interest.....	21
Teacher Goals.....	22
Teacher and Student Historical Thinking.....	22
Teacher Pedagogical Moves and Student Attitudes and Responses.....	22
CHAPTER 2: REVIEW OF RELEVANT LITERATURE.....	24
Teachers' Epistemic Stances—Teachers' Pedagogical Moves.....	27
Contributions from Various Domains.....	27
Focusing on History.....	35
Other Beliefs Influencing Teachers' Pedagogical Moves.....	44
Summary.....	49
Teachers' Pedagogical Choices—Students' Epistemic Stances.....	50
Contributions from Various Domains.....	50
Focusing on History.....	64
Summary.....	67
Students' Epistemic Stances—Students' Outcomes.....	68
The Research on Epistemological Beliefs.....	69
Contributions from Various Domains.....	81
Focusing on History.....	85
Summary.....	89
Teachers' Pedagogical Choices—Students' Learning Outcomes.....	90
Focusing on History.....	93
Summary.....	96
Suggestions from the Reviewed Literature.....	96
CHAPTER 3: METHODS.....	114
Participants.....	114
Measures.....	116
Teachers.....	117
Teacher Questionnaire.....	117
Evaluation of Students' Essays.....	117
Beliefs about History Questionnaire (BHQ).....	118
Constructed Response Task (CRT).....	121
Interest Questionnaire (Teachers).....	122
Students.....	122
Student Questionnaire.....	122
Beliefs about History Questionnaire (BHQ).....	122

Constructed Response Tasks (CRTs).....	123
Procedures.....	123
Data Analysis.....	125
Kinds of Data and Units of Analysis.....	125
Analyses of Data from Think-alouds and Structured Interviews.....	127
The Rubric.....	128
Description of the categories.....	129
Epistemic Beliefs Sub-categories (1-6).....	129
Historical Thinking Sub-categories (7-11).....	133
Reliability.....	135
Analysis of Field Notes and Artifacts.....	136
Analysis of Students' Written Responses to the CRTs.....	136
Analysis of Students' Written Responses to the BHQ.....	137
CHAPTER 4: RESULTS.....	140
The Teachers.....	142
Ellen (Class 1).....	144
Goals.....	144
Making it Real.....	144
Getting it.....	146
Writing in History.....	147
Interest.....	148
Pedagogical Practices.....	148
General Traits.....	148
Thoughtful Recitation.....	150
Tasks.....	152
Use of Historical Sources.....	156
Epistemic Beliefs.....	160
Information, Opinions, and Evidence.....	160
De Pluribus Unum?.....	162
Historical Thinking.....	163
Lauren (Class 2).....	166
Goals.....	166
For the Present.....	166
Primary Sources and Historical Method.....	166
Details and Bare Bones.....	168
Writing in History.....	168
Interest.....	169
Pedagogical Practices.....	170
General Traits.....	170
Lectures and Recitation.....	171
Tasks.....	174
Use of Historical Sources.....	176
Epistemic Beliefs.....	177
Interpretation, Facts, and Opinions.....	177
"Playing" sides?.....	178
Historical Thinking.....	179

Danielle (Class 3).....	181
Goals.....	181
Roots and Cycles.....	181
Primary Sources.....	181
Writing in History.....	183
Interest.....	184
Pedagogical Practices.....	184
General Traits.....	184
“Grounded” Lectures.....	186
Tasks and Activities.....	189
Use of Primary and Secondary Sources.....	191
Epistemic Beliefs.....	194
Digging Deeper.....	194
Historical Thinking.....	197
Comparisons across Teachers.....	199
Goals.....	200
Interest.....	200
General Pedagogy.....	204
Lectures.....	204
Tasks.....	205
Use of Primary and Secondary Sources.....	205
Epistemic Beliefs.....	206
Historical Thinking.....	207
The Students.....	209
Epistemic Beliefs of Students in History.....	209
General Findings.....	209
Specific Epistemic Beliefs Emerged from Analyses of Structured Interviews.....	212
Copier (EBCO).....	214
Transition 1 (TR1).....	218
Subjectivist (EBSUB).....	222
Transition 2 (TR2).....	224
Criterialist (EBCR).....	227
Changes in Students’ Epistemic Beliefs.....	229
General Trends.....	230
Class and Individual Trends.....	232
Class 1.....	232
Jane.....	233
Rick.....	234
Kalyna.....	235
Eric.....	236
Class 2.....	237
Juliet.....	237
Kate.....	238
Monica.....	239
Chris.....	240

Class 3.....	241
Elizabeth.....	241
Mark.....	243
Ashley.....	245
Jack.....	246
Analyses of Students' Written Responses to the BHQ.....	248
Students' Historical Thinking.....	256
Historical Thinking Features Emerged.....	257
Historical Thinking Yes (HTyes).....	259
Historical Thinking No (HTno).....	266
Cut and Paste (CP).....	274
Awareness of the Question (AQ).....	280
Awareness of the Author (AA).....	281
Changes in Students' Historical Thinking.....	282
Analysis of Students' Written Responses to the CRTs.....	285
CHAPTER 5: DISCUSSION.....	289
Limits of the Study.....	289
Contributions of the Study.....	291
Epistemic Consistency.....	291
The Role of Context and Tasks.....	296
Ideas Hindering Historical Thinking.....	302
Relations among Teachers' Variables.....	306
Relations among Teachers' Practices, Students' Epistemic Beliefs, and Students Capacity to Think Historically.....	313
Seeing is believing.....	316
Bias.....	317
Authorless texts.....	318
Reduced Heuristics.....	319
Cutting, Pasting, and Adding.....	322
Questioning.....	324
Epistemic Responsibility.....	325
CHAPTER 6: CONCLUSIONS.....	327
APPENDICES.....	338
Appendix A: Teacher Questionnaire.....	338
Appendix B: Evaluation of Students' Essays.....	341
Appendix C: Beliefs about History Questionnaire (BHQ).....	355
Appendix D: Constructed Response Task (Columbus).....	357
Appendix E: Interest Questionnaire (Teachers).....	361
Appendix F: Student Questionnaire.....	363
Appendix G: Constructed Response Task (Captain Cook).....	365
Appendix H: Rubric for the Analysis of the Constructed Response Tasks and of the Structured Interviews.....	369
Appendix I: Laurens' Class—Students' Epistemic Beliefs Bar Graphs.....	374
REFERENCES.....	380

LIST OF TABLES

Table 2.1	The Relation between Teachers' Epistemic Stance and Teachers' Pedagogical Choices: Summary of Studies.....	100
Table 2.2	The Relation between Teachers' Pedagogical Choices and Students' Epistemic Stance: Summary of Studies.....	104
Table 2.3	The Relation between Students' Epistemic Stance and Students' Outcomes: Summary of Studies.....	107
Table 2.4	The Relation between Teachers' Pedagogical Choices and Students' Outcomes: Summary of Studies.....	112
Table 4.1	Teachers' Comparison Chart.....	201
Table 4.2	Teachers' Average Scores for General (G.I.) and Professional (P.I.) Interest in History	203
Table 4.3	Frequencies and Percentages of Utterances Expressing Different Categories of Teachers' Epistemic Beliefs.....	207
Table 4.4	Frequencies and Percentages of Utterances Expressing Features of Historical Thinking.....	208
Table 4.5	Frequencies, Percentages, and Averages of Utterances Expressing Different Categories of Student Epistemic Beliefs.....	213
Table 4.6	Percentages and Averages of Utterances Expressing Different Categories of Student Epistemic Beliefs by Class.....	231
Table 4.7	Class 1: Percentages and Averages of Utterances Expressing Different Categories of Student Epistemic Beliefs.....	232
Table 4.8	Class 2: Percentages and Averages of Utterances Expressing Different Categories of Student Epistemic Beliefs.....	238
Table 4.9	Class 3: Percentages and Averages of Utterances Expressing Different Categories of Student Epistemic Beliefs.....	242
Table 4.10	Student Weighted Average Scores on Epistemic Stances....	249

Table 4.11	Median, Minimum, and Maximum Values on Copier Items	252
Table 4.12	Median, Minimum, and Maximum Values on Subjectivist Items.....	253
Table 4.13	Median, Minimum, and Maximum Values on Criterialist Items.....	254
Table 4.14	Frequencies, Percentages, and Averages of Utterances Expressing Features of Student Historical Thinking.....	258
Table 4.15	Averages of Utterances Expressing Features of Student Historical Thinking by Class.....	282
Table 4.16	Number of Students' Written Responses to the CRTs Signaling Features of Historical Thinking of Lack Thereof	287
Table 5.1	Relations between Pedagogical Practices and Teachers' and Students' Ideas about History and Its Justification— Comparisons with Experts.....	314

LIST OF FIGURES

Figure 1	Aspects of the theoretical model investigated in the study.....	21
Figure 2	Aspects of the theoretical model addressed in this section (Teacher Epistemic Stances—Teachers’ Pedagogical Moves)..	27
Figure 3	Aspects of the theoretical model addressed in this section (Teachers’ Pedagogical Choices—Students’ Epistemic Stances).....	51
Figure 4	Aspects of the theoretical model addressed in this section (Students’ Epistemic Stances—Students’ Outcomes).....	69
Figure 5	Aspects of the theoretical model addressed in this section (Teachers’ Pedagogical Choices—Students’ Learning Outcomes).....	91
Figure 6	Theoretical Model Revisited.....	328

CHAPTER 1

INTRODUCTION

Is the Renaissance a fact or a concept? The reality is that the Renaissance did not exist until Jules Michelet invented it. And Michelet created that great fact that is the Renaissance in 1840.
(Dario Antiseri, 2001)

What is the nature of human knowledge in general and of historical knowledge in particular? Can beliefs and opinions be justified? Is history just another word to indicate the past? What is the boundary, if any, between facts and interpretations? These are just a few of the questions that philosophers, and in particular gnoseologists, epistemologists, and hermeneuticists, have discussed throughout human history. In our time, Descartes's doubt about the grounds of one's beliefs still echoes in these questions, since the relation between knowledge and reality has become especially problematic in the modern and post-modern cultural landscape.

In psychology, the cognitive revolution (Phillips, 1995) emphasized the constructed nature of knowledge, questioning, in its most radical expressions, the very existence of a knowable reality external to the individual, and thus theorizing the exclusively subjective nature of knowledge (von Glasersfeld, 1991). The issue of objectivity has also been frequently discussed in history, prompting Peter Novick (1988) to provocatively title the introduction to his review of American historiography over the last century, "Nailing jelly to the wall."

Statement of the Problem and Its Significance

Are the answers to these questions relevant only for perspective philosophers or do they also matter to researchers investigating the cognitive and social development of individuals (Kuhn & Weinstock, 2002)? More particularly, do these questions and their answers affect the processes of teaching and learning that happen in schools and thus the outcome of education? A few examples from the political and educational debates suggest they do. For instance, the seemingly never-ending American controversy about the teaching of evolution in schools keeps begging the eminently epistemic question about the definition and the status of scientific theories and, more generally, about the warrants for beliefs.

In history education, recurrently disappointing test results of students' ability to recall traditional milestones of American history is usually met by a renewed commitment to foster students' memorization of curricula that have become increasingly vast, in the attempt to conciliate the goal of introducing new generations of Americans to a common narrative of the nation's past while paying at least some attention to all the different voices characterizing American society (VanSledright, 2008). Such move also implies an essentially epistemic choice since it entails a definition of what is the nature of history (i.e., factual) and of the grounds on which historical knowledge rests. In both cases, the debates that ensue usually decay into partisan discussions, with more or less high political overtones, and epistemic questions are left in the background, leaving the question about the nature, the warrants, and thus the limits of *what* one knows as the result of learning science or history for the most part unexplored.

Yet, the consequences for the educational process of this oversight cannot be lightly dismissed, since students' epistemic beliefs have been related to key components of the learning process such as comprehension (Schommer, 1990), strategic processing (Davis, 2003; Kardash & Howell, 2000), interpretation of controversial issues (Kardash & Scholes, 1996), evaluation of arguments (Stanovich & West, 1997), and understanding of multiple texts (Bråten, 2008; Bråten, & Strømsø, 2006). In addition, research found that teachers' beliefs about knowing and learning specific subject matters influence teachers' pedagogical choices and the kind of discourse they foster in their classrooms (Maggioni & Parkinson, 2008). Considered together, these results point to the role that the answers to the questions that opened this chapter play in the ability of individuals to critically evaluate and profit from the flow of information and ideas they encounter in the classroom, but, more generally, in their daily lives.

Thus, for educational psychologists, it becomes important to understand how teachers and learners navigate the epistemic terrain, in the current sociocultural landscape. Specifically, what do teachers and students mean when they say that they *know* something? How do they conceptualize the relation between the knower and the object of knowledge? How do they form their conceptions about knowledge? In other words, educational psychologists are interested in epistemic cognition (i.e., in the processes in which people engage in order to consider the criteria, limits, and certainty of knowing; Kitchener, 1983) and in epistemic beliefs (i.e., in the ideas that people have about the nature and justification of knowledge; Hofer & Pintrich, 1997).

Building mainly on the work of Perry (1970), the study of epistemic cognition historically has followed two main paths. On one hand, research has focused on tracing the development of epistemic cognition across the life span, with particular attention reserved to the passage from adolescence to adulthood (King & Kitchener, 2002; Kuhn & Weinstock, 2002). In effect, researchers following this path have studied the processes activated as individuals face complex, ill-structured problems (i.e., problems not solvable by the direct application of an algorithm). Based on the processes that emerged during the engagement with such ill-structured problems, researchers developed definitions of epistemic cognition and individuated the features characterizing different stages of epistemic development.

Kitchener's (1983) definition has been alluded to. Focusing mainly on the characteristics of the knower, she defined epistemic cognition as a level of cognition at which individuals consider the limits, the certainty, and the criteria of knowing. By comparison, Kuhn and Weinstock (2002) specifically considered the coordination of the subjective and objective dimensions of knowing. Building on the latter approach, Hofer (2004) forwarded a conception of epistemic cognition as a metacognitive process that influences learning and knowledge building. As such, epistemic cognition stays in a dynamic relation with the learning environment, that comprises the teacher-student relationship, the specific task at hand, and, more generally, the academic setting.

On the other hand, researchers following the second path have strived to individuate precise relations between particular sets of students' beliefs and specific, desirable learning outcomes (Schommer, 1990) focusing their studies on the nature of

personal epistemology and on the role that it plays in cognition. In their work, they referred to the construct of personal epistemology, testing the hypothesis that it could be represented as “a system of more or less independent beliefs” (Schommer-Aikins, 2002, p. 104) regarding the stability, structure, and source of knowledge and aspects of learning, such as speed and control of knowledge acquisition. Researchers also explored the consistency of these components across different student populations (Jehng, Johnson, & Anderson, 1993; Schraw, Bendixen, & Dunkle, 2002).

The next step in this line of research consisted in the investigation of relations between specific epistemic beliefs and particular learning outcomes. For example, researchers investigated whether students who believed that learning occurred quickly or not at all tended to differ in terms of GPA from students who believed that learning was a gradual process (Schommer, 1993; Schommer & Dunnell, 1994). More generally, researchers studied relations between the facets of personal epistemology, identified through the analysis of questionnaires, and significant learning outcomes, such as students learning strategies, comprehension of complex text (Schommer, Crouse, & Rhodes, 1992) and student ability to solve ill-structured problems (Schraw, Dunkle, & Bendixen, 1995).

Clarifications

Before proceeding, a couple of clarifications may be helpful. The first regards the issue about the domain-general or domain-specific nature of epistemic cognition and epistemic beliefs. Although I believe that studying these constructs within a specific domain facilitates their investigation, I do not intend to imply that people do not also develop epistemic cognition and epistemic beliefs with reference to

knowledge in general. Yet, the investigation of the relation between domain-general and domain-specific epistemic cognition is not the focus of this study, although I believe it can address very interesting research questions. I discuss the rationales for my preference for studying epistemic cognition and epistemic beliefs in the domain of history in the next section, in the context of the purpose of this study.

A second note about terminology may also be useful. The term *epistemic cognition* has already been defined as the cognitive process in which people engage while considering the nature and the justification of knowledge. Thus, it suggests something that people do when they are prompted to reflect on the nature of what they regard as knowledge and on the warrants for calling these ideas about the world knowledge. According to Kitchener (1983), this process is activated when individuals are faced by a problem that cannot be solved by the simple application of an algorithm.

I will instead use the term *epistemic stance* to refer to the system of beliefs about the nature and justification of knowledge that people entertain at a certain moment in time. I conceive this stance as a sort of “epistemic gaze” (or epistemic attitude) that characterizes the way in which people look at the world (the external, physical reality, themselves, or ideas) in order to gain knowledge. From this perspective, the relation between epistemic cognition and epistemic stance appears a dynamic relation. On one hand, current epistemic stances may influence the kind of processes activated once people are prompted to consider the nature and warrants of what they know. On the other hand, the way in which people wrestle with epistemic issues may influence their future epistemic stances.

Epistemological beliefs is another term widely used in the literature and encompasses different beliefs about knowledge and learning. Even if I agree with Hofer's (2004, p. 47) remark that the term *epistemic beliefs* would better reflect the beliefs investigated (i.e., beliefs about knowledge and not about epistemology), in referring to results of specific studies, I maintain the terminology originally used by the investigators. In this way, the theoretical framework of the research project included in the review should be more transparent and the correspondence between original studies and the contributions summarized in the review more accurate. In addition, whenever possible, I try to specify the content of the beliefs investigated in the studies. In this way, I hope to facilitate corroboration across the investigations considered in the review.

Purpose of the Study

Both paths of research in epistemic cognition and epistemic beliefs have suggested the existence of a relation between epistemic beliefs, epistemic cognition, and learning. Both traditions have also supported the hypothesis that formal instruction plays a role in epistemic development (Hofer & Pintrich, 2002). However, the investigation of how specific beliefs mature and epistemic cognition develops has been far from systematic, even though a clearer understanding of these processes seems crucial for the design of educational interventions aiming at facilitating meaningful and successful learning.

In 2002, summarizing future challenges for research on personal epistemology, Paul Pintrich addressed this issue, pointing to the need of studies investigating the mechanisms that drive change and suggesting the hypothesis that

“epistemological development is a function of both internal psychological mechanism as well as contextual facilitators and constraints” (2002, p. 403). The relationship between teachers and students is core to the educational process and the locus in which individual characteristics interact and create a powerful context that affects in turn its participants (Létourneau & Moisan, 2004; Rosenzweig, 2000). Hence, focusing attention on these interactions and trying to understand the processes at work seems a promising strategy to further the exploration of what affects epistemic development and, in turn, of what is affected by it. In other words, I believe it is important to explore whether and how, in schools, students are learning not only a set of contents but also a way of thinking about the nature and the process of knowing, knowing that regards both the world and themselves.

This focus on the teacher/student interaction does not discount the influences that other agents and the culture at large may have on the development of students’ belief systems (Alexander & Dochy, 1995; Khine, 2008; Maggioni, Riconscente, & Alexander, 2006; Tabak & Weinstock, 2008). However, by centering the attention on the relation between teachers and students that takes place in the classroom, this investigation acknowledges the effects that schooling has repeatedly shown to exert on cognitive development in general and on epistemic development in particular (Jehng, Johnson, & Anderson, 1993; King & Kitchener, 2002; Kuhn & Weinstock, 2002; Paulsen & Wells, 1998; Perry, 1970). I also believe that this focus on the teacher/student relationship may foster a deeper understanding of the process of knowing that lies at the core of the educational experience. In this way, I hope to

contribute to bridging the lamented gap between educational research and pedagogical practice (Schraw, 2001).

A survey of the literature showed that very little research directly addresses the relation between teachers' and students' epistemic stances and teachers' and students' epistemic cognition. Further, while students' beliefs have been repeatedly studied within various theoretical frameworks (Hofer & Pintrich, 2002), teachers' epistemic stances have been more rarely addressed. Therefore, in selecting the articles to review for this study, I principally referred to the potential of the research to shed light on some facets of the processes that link teachers' epistemic stances to students' learning outcomes.

The review of the literature highlighted that researchers are still struggling with theoretical and methodological problems in the study of epistemic cognition and epistemic beliefs in school settings. Given their complexity, the operationalization of epistemological constructs has proven difficult, leaving many issues of validity and generalizability open to debate (Wood & Kardash, 2002). Yet, the review of the literature also individuated a set of qualitative studies that provide rich descriptions of teachers' and students' reasoning about knowledge and knowing in specific domains, exemplifying how epistemic cognition can manifest itself during the learning process (e.g., Elby, 2001; Lyons, 1990; Radigan, 2002; Rosenberg, Hammer, & Phelan, 2006; VanSledright, 2002, Wineburg, 2001a).

Studies on expertise have also furthered my understanding of epistemic reasoning within specific domains, offering insights into the characteristics of experts' thinking within particular disciplines, and thus exemplifying the features of

the relation between an expert knower and its object of knowledge (Alexander, 2003; Stevens, Wineburg, Herrenkohl, & Bell, 2005; Wineburg, 2001c). In particular, studies on the development of expertise indicate that differences in epistemic reasoning and epistemic beliefs characterize different levels of expertise in a specific field, such as those found among students, K-12 teachers, and scientists or historians (Blanco & Niaz, 1997; Brickhouse, 1990; Radigan, 2002; Wineburg, 1991; Yeager & Davis, 1996). Thus, by nesting the study of epistemic cognition and epistemic beliefs within a specific discipline, I intend to profit from the insights provided by these bodies of knowledge about the characteristics of these constructs, the description of their development, and the modality of their potential influence on the teaching and learning processes.

Beside the review of the literature, another set of reasons made the decision to study the role of epistemic cognition and epistemic beliefs in teaching and learning within a specific domain particularly reasonable and appealing to me. The first relates to the instance that, at least in the Western tradition, knowledge has been organized in disciplines, each of them dealing with a particular object, and following a specific method (Maggioni & Alexander, in press). Although disciplinary boundaries currently tend to be perceived as fuzzy and borders between disciplines are often blurred, differences in the methods and in the standards of justifications still characterize different areas of knowledge (VanSledright & Limon, 2006). The use of these methods and the reference to these standards of justification may suggest how experts' epistemic cognition looks like in a specific field, serve as useful indicators of differences in epistemic cognition, and thus aid its operationalization.

The second reason is grounded in the acknowledgment that classroom work is articulated within specific subject areas, with specialization increasing in the higher grades. In other words, the knowledge that students develop in schools tends to be referred to specific subjects, such as science, literature, mathematics, or history. Thus, it seems plausible to hypothesize that the encounter with problems potentially eliciting epistemic cognition in the academic world also happens within specific disciplinary fields and is shaped by their particular characteristics (i.e., investigating the past poses epistemic challenges that, in some measure, differ from those posed by the investigation of the physical reality). Although the relation between academic disciplines and school subjects has been discussed in the educational literature and deemed problematic (VanSledright & Limon, 2006), the influence of the subject matter on the processes of teaching and learning has also been acknowledged by a large body of educational research in the past decades (Schwab, 1978; Shulman, 1987) and inspired cognitive psychologists to study the development of cognition within specific domains (Alexander, 2000). Researchers have also found that students' epistemic beliefs tend to differ across domains (Buehl, Alexander, & Murphy, 2002; Jehng, Johnson, & Anderson, 1993; Muis, Bendixen, & Haerle, 2006).

The Case for History

Although the specific choice of history for this study was initially prompted by a personal interest in this discipline, there are several reasons that make history an especially appealing domain for furthering understanding of epistemic cognition and epistemic beliefs. From a research perspective, there is a potentially helpful overlapping between epistemic cognition and the ability of people to think

historically, as suggested by the literature on historical thinking (Lee & Shemilt, 2003; VanSledright, 2002; Wineburg, 2001a). Among other attitudes, historical thinking requires people to be aware of the nature of history, to generate historical arguments based on the evidence available, and to evaluate the strength of such arguments. To parallel Kitchener's definition of epistemic cognition, we may say that historical thinking necessarily includes the processes in which people engage in order to consider the criteria necessary to generate and evaluate historical arguments, the limits of historical knowledge, and the certainty of that knowledge.

As such, historical thinking can be conceived as a valid descriptor of epistemic cognition within the specific domain of history, with the additional benefit that results of qualitative studies done within this domain have offered an articulated depiction of it (Wineburg, 2001a). This contribution is particularly remarkable, especially when considering the problems of validity lamented by epistemological researchers. Specifically, corroboration of the findings supports the emergence of a few consistent historical thinking traits, an occurrence that counterweights the low generalizability deriving from the mainly qualitative nature of this research. In addition, research on the development of historical thinking in Great Britain further sharpened the understanding of how historical thinking develops across different levels of expertise (Lee, 2004). This research supported the evidence provided by qualitative studies and involved a large number of elementary and middle school students. Thus, it increased confidence in its potential generalizability.

In terms of its educational implication, furthering understanding of what historical thinking may look like and how it is currently fostered in the classrooms is

especially crucial, since a few history educators actually contend that opening to students the possibility to understand and experience how historical knowledge is generated is a necessary step in enabling them to develop a critical attitude, fundamental in a democratic society (Wineburg, 2007). Some also contend that this work is necessary if students are to move beyond getting familiar with some form of collective memory and develop an understanding of the past that takes into account all its complexities, nuances, and dissonances (Lee, 2004; Létourneau & Moisan, 2004; Seixas, 2000; VanSledright, 2002).

In addition, some of the materials and tasks included in current history curricula may have a particular potential for eliciting discussion of epistemic issues and consideration of how knowledge is generated and thus for fostering that kind of critical literacy necessary to gain understanding within information-rich contexts. As suggested by extant research, several components that characterize reading expertise in history are also at the core of that process that makes possible the building of meaningful knowledge out of the multiplicity of sources increasingly available by advances in information technology (Rouet, Britt, Mason, & Perfetti, 1996; Shanahan, 2009; VanSledright, 2004). Thus, history may provide a particularly apt domain for gaining useful insights about how well equipped are students to navigate this terrain.

For example, History Advanced Placement Exams contain a Document Based Question (DBQ) that asks students to take a position on a particular historical issue based on documents provided and using knowledge of the historical context. This form of assessment fostered the infusion of primary sources in the curriculum and a

focus on how historical sources are analyzed and evaluated in order to build historical arguments, an endeavor that is epistemic in nature, since it considers how historical knowledge is generated and the warrants for historical claims. Increasingly, school systems are pushing for increasing the number of students taking AP courses (Uy, 2009); in order to put as many students as possible in the position to attend such courses, they are thus promoting the inclusion in the lower grades of goals that may prepare students to read, analyze, and evaluate sources.

Responding in part to this trend, textbooks are increasingly adding primary sources, and perspectives that may differ from the one adopted by the main narrative (e.g., women, different ethnic groups). They are also introducing personal stories that may illustrate a specific topic. Though the traditional view of American history as the narrative of expanding liberties is not challenged and the voices of textbooks' authors are still concealed behind the tone of impersonal, factual narratives (VanSledright, 2008), textbooks are usually embedding different kinds of texts, such as pictures, newspapers' excerpts, broadsides, personal diaries, letters, maps, and graphic representations of data related to the topics addressed (Afflerbach & VanSledright, 2001).

This particular text structure constitutes a relevant challenge in terms of reading comprehension, because students would need to move from an approach to the textbook as a single text to a reading that considers its parts as multiple texts that need to be integrated by the reader (Afflerbach & VanSledright, 2001), a feat that is clearly not facilitated by the fact that these additional features are usually not referred to, nor commented upon in the main narrative of the textbook. Such a move implies a

concept of the relation between a text and a reader that has a strong epistemic connotation, too. For example, does the text simply convey an objective state of affairs or does it argue for a certain view of the past? The answer to this question sets different reading goals and thus makes the use of certain strategies (e.g., summarizing, repeating, analyzing, or elaborating) more or less adaptive for the task so envisioned.

In fact, research on reading multiple texts suggests that beliefs about knowledge and knowing play a particularly important role in the strategies readers use for processing the texts (especially with regard to elaboration and monitoring strategies), in their standards for understanding, and in the level of understanding they are able to achieve (Bråten, 2008; Hofer, 2004; Muis, 2007; Ryan, 1984). Similarly, the literature on historical thinking documents that understanding of concepts central to the development of historical knowledge (e.g., evidence) and familiarity with the procedures employed by historical investigators to research and interpret the past (e.g., contextualization, sourcing, and corroboration) are crucial in achieving understanding from the reading of multiple texts in history (Hynd, Holschuh, & Hubbard, 2004). In turn, these concepts and procedures presuppose particular epistemological ideas regarding the nature of historical knowledge and how its knowledge claims may be justified (Lee & Shemilt, 2003; VanSledright, 2002; Wineburg, 2001a).

Does the introduction of tasks such as the DBQ, the use of textbooks with a variety of embedded historical texts, and, more generally, the consideration of primary sources in the history classroom actually influence how teachers and students

view historical knowledge? A review of the literature does not provide a clear-cut answer to this question, although it does caution from assuming the effectiveness of “teacher-proof” curricular intervention (Pajares & Graham, 1998). In particular, research suggests that teachers’ beliefs influence their specific pedagogical moves, which, in turn, tend to influence students’ epistemic views of history (Bain, 2000, 2005; Husbands, Kitson, & Pendry, 2003; Lee & Ashby, 2000; Lee & Shemilt, 2003; Maggioni, VanSledright, & Reddy, 2009; VanSledright, 2002).

Research also indicates that effective teaching practices require the involvement of students in knowledge-building activities, accompanied by explicit reflection on the reasons for the actions performed and the results obtained, reflection guided by the teacher and supporting epistemic awareness (McRobbie & Thomas, 2001; McNeal, 1995; Ryder, Leach & Driver, 1999; Simpson & Rush, 2003). Further, it suggests that the work necessary to affect students’ beliefs is very subtle and necessitates time, repeated exposure, and modeling of the kind of epistemic reasoning that the teacher strives to foster (Dagher, Brickhouse, Shipman, & Letts, 2004; Elby, 2001; Windschitl & Andre, 1998).

Yet, studies reporting success in fostering student epistemic development in the United States have mostly focused on classes taught by teachers who were atypical in many respects (e.g., Bain, 2000, 2005; VanSledright, 2002). Besides bringing to the classroom a wealth of content and pedagogical knowledge, these teachers also espoused the clear goal of fostering epistemic development in their students. The same intent does not seem to characterize the context of most school

systems, where history curricula and pacing guides tend to embody the push for “coverage” more than an understanding of the nature of historical knowledge.

As a result, I believe that our knowledge of the processes that foster the development of certain epistemic stances in teachers and in students in general and within the history domain in particular is still limited. More precisely, we know little about how the daily interactions that take place in the history classroom contribute to foster or hinder epistemic development in history, and about how teachers’ epistemic stances interact with students’ epistemic stances in promoting or hindering historical thinking for individual students.

Previous studies tended to investigate only specific facets of history-specific epistemic beliefs and of students’ and teachers’ ability to think historically, leaving the processes that may concur to the development of these constructs uncharted, for the most part. This study aims to enrich the description of these constructs and of the processes that, within the classroom context, may contribute to their development. In so doing, I hope that an increased understanding of students’ and teachers’ ability to think historically and of their epistemic beliefs in regard to history together with a sharpened awareness of what can influence them may help making informed pedagogical choices in the history classrooms, in teachers’ education and professional development programs, and in curriculum development.

Focus of the Study

The study focuses on exploring the students’ and teachers’ epistemic beliefs in history and their ability to think historically. My interest in these constructs is strongly related to my view of education in general and in particular to what I deem to

be one of its fundamental components, namely criticism. With this term I refer to the attitude of examining what one has received from others (e.g., parents, teachers, community) as a viable hypothesis for understanding oneself, the world, and one's place in it in order to verify whether one is justified to believe it. While I certainly find it irrational to ask each generation to reinvent the wheel, I also believe that handing over an interpretation of the world without providing at the same time the tools to evaluate it falls short of educating free human beings. Especially in democratic societies, where key decisions (e.g., electing the government and voting in a jury) are entrusted into the hands of the citizens, the social implications of such failure are vast, threatening the root of that very freedom that those societies vowed to protect.

I believe that the capacity to think historically and a familiarity with the criteria used by historians to develop and evaluate historical knowledge can greatly contribute to such education in criticism. Understanding how the history classroom can foster such development is therefore particularly important. For this reason, this study pays particular attention to teachers' pedagogical moves that may influence students' epistemic stances and concur to the development of students' historical thinking. With the term *pedagogical moves*, I refer to all those acts and attitudes that inform the teachers' relationship with the students. In particular, I include those pedagogical choices that teachers purposefully make to reach particular goals and also those acts that do not imply metacognitive awareness or explicitly stated purpose on the part of the teachers. In considering these moves, I also take into account the

influence of teachers' goals and teachers' interest, and the relation between teachers' epistemic stances and teachers' goals.

The choice to focus on high-school history classrooms is related, in part, to the desire to extend to this age group the exploration of history-specific epistemic beliefs and of the progression in historical thinking traced by Lee and his colleagues for the younger students participating in the Project Chata (7-14 years old). Compared to their younger counterparts, adolescents should be better equipped to handle the challenges that thinking historically entails (Foster, Hoge, & Rosch, 1999; Lee & Ashby, 2000; Lee & Shemilt, 2003; Levstik & Barton, 1996; Thornton & Vukelich, 1988). For example, their capacity to consider multiple points of views and to empathize with experiences different from their own should increase with their age (Lee, Dickinson, & Ashby, 1997; VanSledright, 2001). Their increased capacity to think abstractly should also facilitate the development of secondary substantive concepts (i.e, government, revolution) and thus foster a more efficient structuring of historical knowledge (Alexander, 2003). In addition, the choice of this age-group is also motivated by a commitment of the specific school system in which I ran the study to encourage the use and the analysis of primary sources in the curriculum and to support their teachers with professional development specifically targeting this objective. This occurrence offered a promising setting for the emergence of epistemological questions and for the development of historical thinking. Further details about the choice of this specific setting are discussed in Chapter 3.

Research Questions

The study addresses the following research questions, with reference to teachers and students in three high-school history classrooms:

- How do teachers and students conceptualize the relation between historical knowledge and the past?
- What do teachers and students mean when they say that they *know* something about the past?
- How do teachers and students justify that they know something about the past?
- How do teachers' epistemic stances affect their pedagogical moves?
- How do teachers' epistemic stances affect their goals?
- How do teachers' goals and interest affect their pedagogical moves?
- What teacher pedagogical moves seem to affect student historical thinking and epistemic beliefs?
- What student attitudes and responses seem to affect teacher pedagogical moves and epistemic stances?

Theoretical Model

The aspects of the theoretical model investigated by the study are summarized in Figure 1. In this section, I offer a definition of these elements; the description of how I assessed them is included in Chapter 3.

Teacher and Student History-specific Epistemic Stances

Epistemic stances refer to the system of beliefs about the nature and justification of historical knowledge that teachers and students entertain at a certain

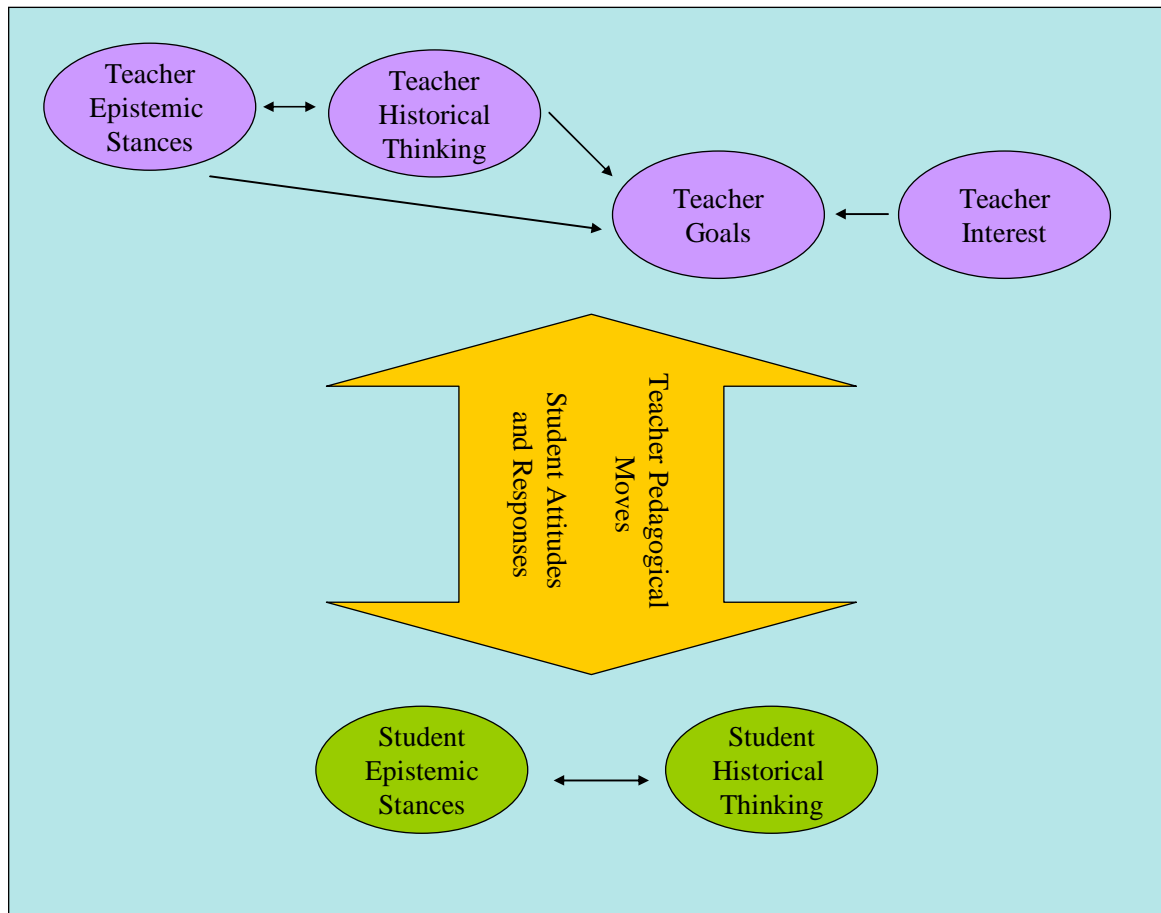


Figure 1: Aspects of the theoretical model investigated in the study.

moment in time. In other words, I use this term to identify a particular set of domain-specific epistemic beliefs.

Teacher Interest

Teacher interest in history is defined as personal engagement in history related activities. These activities include participation in acts or events appealing to the general public and also participation in acts or events involving the professional community.

Teacher Goals

Teacher goals comprise general educational goals (e.g., fostering student analysis skills) and specific goals in teaching history (e.g., fostering contextualization of historical events).

Teacher and Student Historical Thinking

Historical thinking encompasses a set of disciplinary heuristics and attitudes that individuals use in the process of generating historical knowledge. It includes the processes in which individuals engage in order to consider the criteria necessary to generate and evaluate historical arguments, the limits of historical knowledge, and the certainty of that knowledge. As such, it represents the enactment of epistemic cognition (i.e., the cognitive processes in which individuals engage while considering the nature and justification of knowledge) in the history domain.

Teacher Pedagogical Moves and Student Attitudes and Responses

The space enclosed within the double arrow symbolizes the processes taking place within the classroom that may concur to explain the relation between teacher epistemic stances and historical thinking and student epistemic stances and historical thinking and their changes during the course of a semester. I am using the term “moves” to indicate the choices and the decisions that teachers made in respect to the teaching of history; thus, I am using these terms interchangeably. I symbolize the process with a double arrow because I hypothesize that teachers’ pedagogical moves influence student ability to think historically and the development of domain-specific epistemic beliefs; I also hypothesize that feedback from students contribute to the evaluation and potential revision of teachers’ pedagogical decisions. Chapter II

analyzes empirical studies that address one or more of the relations posited in the theoretical model.

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

Following the theoretical model introduced in Chapter 1, this chapter reviews empirical studies investigating epistemic cognition in teaching and learning. Studies were grouped into four main sections, each exploring a specific relation hypothesized in the theoretical model. Within each section, studies concerning the history domain and studies nested in other domains are grouped in two different subsections. Each section addresses several critical questions. First, are the results of studies reported in the educational literature compatible with the relation hypothesized? Do these findings suggest any plausible process that may help to explain the relations observed? What do these constructs and their relations look like within the history domain?

The first section considers studies examining the relation between teachers' beliefs about knowledge and knowing (in general and in the specific discipline taught) and pedagogical moves (preferred and implemented). Within this section, I also included a few studies that investigated factors that may influence the formation of teachers' beliefs and their pedagogical preferences. The second section summarizes the contributions of studies examining the relations between teachers' pedagogical moves and students' epistemic beliefs. The third consists of studies exploring the relation between students' epistemic beliefs and learning outcomes. Finally, the last section considers research projects that investigated the relation between teachers' pedagogical moves targeting epistemic cognition and students' outcomes, but did not explicitly studied the mediational role of students' beliefs.

Four tables summarizing the studies included in each section may be found at the end of Chapter 2.

Initially, I identified studies through three online databases (PsycINFO, ERIC, and Education Abstract). Searched keywords included epistem* beliefs, epistemic cognition, student* and epistemic cognition, teacher* and epistemic cognition, student* and epistem* beliefs, teacher* and epistem* beliefs, student* and teacher* and epistem* beliefs, “teacher* epistem* beliefs and teaching, historical thinking, and history teaching. I examined the abstracts to identify studies relevant to the topic; I also reviewed the reference sections of the selected articles to identify further studies. Finally, I conducted an additional search of the aforementioned databases to identify additional articles published by researchers whose studies closely addressed the questions explored by this review. I also used the review of cognitive research in history and geography included in the Handbook of Education Psychology to individuate additional studies (VanSledright & Limon, 2006).

Given the diversity of the literature included in the review, it is important to note that some works targeted only one of the relation illustrated in the model, while others attempted to capture the entire process, from teachers’ beliefs to students’ outcomes. The designs of these research projects were also diverse, including several examples of qualitative research as well as some experimental and quasi-experimental studies. For the most part, these investigations were carried out in naturalistic settings, being sometimes nested in intervention monitoring activities (Mifflin, Campbell, & Price, 1999, 2000; Zohar & Dori, 2003).

Some of the referenced studies targeted beliefs about learning as well as beliefs about knowledge. The distinction between epistemic beliefs and beliefs about learning has been debated in the literature, especially with regard to the factor structure emerging from data obtained from questionnaires such as the *Epistemological Questionnaire* (Schommer, 1990), the *Beliefs About Knowledge and Learning* (Jehng, Johnson, & Anderson, 1993), and the *Epistemic Beliefs Inventory* (Schraw, Dunkle, & Bendixen, 1995). In particular, the epistemic nature of beliefs about the speed of learning and about the fixed or developing character of the ability to learn has been repeatedly challenged.

For the sake of clarity, since this review targets epistemic cognition, its main interest lays with beliefs about the nature, representation, and justification of knowledge. These beliefs would be considered fully epistemic by most researchers (Hofer, 2008; Muis, 2004). Nevertheless, I also included results regarding the relation between beliefs about learning and students' outcomes whenever these beliefs had been investigated together with beliefs about the nature of knowledge. Yet, I tried to clearly identify which beliefs were related to particular outcomes. For the same reason, I indicated what measures were used in the various studies to tap epistemological beliefs, since different questionnaires target different dimensions of personal epistemology. A complete review of different frameworks and general issues related to the study of epistemic cognition and epistemic beliefs exceeds the purpose of this review.

Teachers' Epistemic Stances—Teachers' Pedagogical Moves

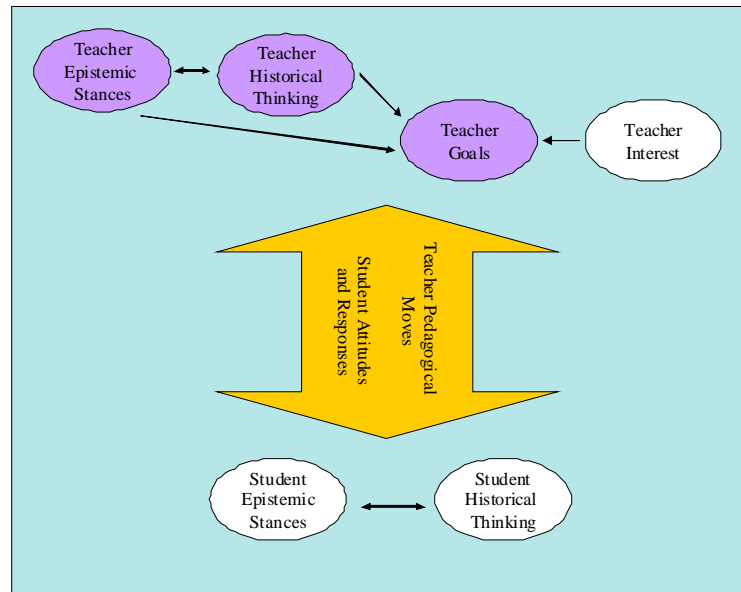


Figure 2: Aspects of the theoretical model addressed in this section

Contributions from Various Domains

The influence that the epistemic stance of teachers has on instruction was addressed by all the studies summarized in Table 2.1. For the most part, studies addressing teachers' epistemic stances are nested in specific disciplines, with a decisive preponderance in the sciences. Such a pattern underscores the importance of considering the domain-specific component of epistemic beliefs. In general, results stress the close relation between teachers' beliefs about the nature and the process of knowing and the teaching strategies implemented in the classroom (e.g., Brickhouse, 1990; Hashweh, 1996; Zohar, Degani, & Vaaknin, 2001). The terminology used to identify a particular set of beliefs varies across studies, even if the descriptions are often overlapping. Some researchers, for example, have adopted a constructivist versus empiricist (or positivist) classification (Hashweh, 1996; Tsai, 2006). Constructivist beliefs were characterized by an emphasis on the active role of the

learner in the construction of knowledge, acknowledgment of the need of conceptual change and knowledge restructuring, and stress of the role of theory in the purpose and development of science. Empiricist beliefs underscored the need of reinforcement in learning and a view of scientific knowledge as objective, permanent, and consisting in the accumulation of discovered facts.

Other researchers contrasted perspectives reflecting the philosophical position of Kuhn and Lakatos to views more consistent with logical positivism and logical empiricism (Brickhouse, 1990). In this case, the researchers focused on teachers' characterizations of scientific theories. Teachers consistent with the first philosophical perspective tended to conceive theories as tools to solve problems, viewed the scientific progress as theory-driven, and believed that scientific progress consisted more in changes in theories than in accumulation of facts. On the other hand, teachers consistent with the second philosophical perspective tended to describe theories as truth uncovered through rigorous experimentation, viewed the scientific process as purely inductive, and considered the progress in science mainly as the accumulation of facts.

Finally, other researchers cast the difference in epistemic beliefs among teachers in terms of viewing learning and teaching as a transmission or a construction of knowledge (Zohar, Degani, & Vaaknin, 2001). Given such variety, I have tried to go beyond the label of the beliefs investigated and to refer, as much as possible, to the content of the beliefs described by the various studies. In so doing, I aim at increasing a valid comparability and synthesis of findings.

Assessment methods varied similarly, ranging from paper-and-pencil measures of epistemic beliefs (Hashweh, 1996) to extensive observations and analysis of interview protocols (Brickhouse, 1990) and self-case studies (Elby, 2001). These differences notwithstanding, the studies identified a consistent relation between clusters of particular beliefs and particular teaching practices.

For example, based on responses to an interview probing syntactical knowledge of science, Brickhouse (1990) purposefully selected three pre-college science teachers for her study. The selection was intended to highlight differences among the participants. Two of the participants were teaching at the middle-school level, while one was a high-school teacher. Further, two participants had a long history in teaching, while one, even if of comparable age, was only in his second year of teaching. Teachers were observed for an extensive period and repeatedly interviewed.

The Brickhouse (1990) study showed that conceiving theories as tools to solve problems, viewing the scientific process as theory-driven, and believing that scientific progress consists more in changes in theories than in accumulation of facts correlated with a problem-based teaching approach, centrality of prediction in experimental activities, and continuous reinterpretation of laws and concepts previously encountered. These practices, in turn, fostered the integration of knowledge among students. Conversely, conceiving of theories as truth uncovered through rigorous experimentation, viewing the scientific process as purely inductive, and considering the progress in science mainly as the accumulation of facts correlated with teaching methods largely recurring to memorization, avoidance of content perceived as

potentially contradicting religious beliefs (e.g., evolution), stress of procedural precision in experimental activities, and scarce attention given to the integration of knowledge.

Moreover, the teacher expressing the “theories as tools” beliefs and implementing the correlated methods had the strongest academic preparation in science and had been teaching at the high-school level. Therefore, she coupled her beliefs about the nature of science with a stronger content knowledge of the discipline and a different teaching environment. Given the nature of the study, the possible impact of these factors on her epistemic beliefs and pedagogical moves cannot be known.

Teachers’ beliefs also influenced their interpretation and consequent response to students’ “wrong answers.” For example, Hashweh (1996) found that teachers holding constructivist beliefs (described as beliefs emphasizing the active role of learners, the role of theory, and the need for knowledge restructuring) tended to be more sensitive in detecting the presence of alternative conceptions in students’ answers than teachers holding empiricist beliefs (characterized as beliefs in the need of reinforcement in learning and a view of knowledge as objective, permanent, and cumulative of discovered facts). Constructivist teachers were therefore more likely to address the misconceptions, facilitating the overall integration of knowledge. They also tended to use a wider array of teaching strategies, such as refutation (use of counterexamples or anomalies), persuasion (using representations aiming at convincing the student), and solicitation of further questioning. Empiricist teachers tended instead to rehearse the “correct answer,” offering further explanations.

Brickhouse (1990) also had noted that teachers who viewed scientific progress as purely inductive tended to interpret students' "wrong answers" as procedural failings, and reacted by encouraging students to follow directions better in order to obtain the "right answers." Conversely, constructivist teachers in Hashweh's (1996) study tended to be more sensitive to the presence of misconceptions and responded to them with multiple and more effective teaching strategies.

It is also interesting to note a further implication of teachers' beliefs emerged from the Hashweh's (1996) study. The responses of four teachers, two classified as constructivists and two classified as empiricists, were compared. Interestingly, both the academic background and instructional contexts of these teachers differed. In particular, one constructivist teacher held a bachelor's in science while the other graduated from a two-year college-level teacher training institute. Further, even though both were teaching at the high-school level, a private school in Jerusalem employed one of them, while the other was teaching in a Palestinian refugee camp.

The same was true for the empiricist teachers. The comparison of their responses did not support the hypothesis that their academic backgrounds or their instructional contexts were responsible for their teaching strategies. Rather, the difference in their beliefs seemed to account for the different pedagogical moves they made. The limited number of cases in the Hashweh's study restricts generalizations. In fact, other studies have suggested a correlation between teachers' disciplinary knowledge and their teaching strategies (Gillaspie & Davis, 1998). Moreover, in evaluating its results, it is important to note that data were obtained using a three-part

paper-and-pencil instrument, consisting of both open-ended and closed-ended questions. There were no direct observations of teachers' behavior in the classroom.

Influences of teachers' beliefs about teaching and learning were also found to correlate with the characteristics of the writing programs implemented for fifth graders (Lipson, Mosenthal, Daniels, & Woodside-Jiron, 2000). In particular, teachers who tended to view students as recipients of instruction and gave more centrality to the curriculum than to individual children's needs also tended to move all students through the phases of writing at the same time, operated within a more rigid timeframe, and kept a tighter control over topic selection. Writing was conceived as a separate period, and students were expected to complete relatively short assignments within the timeframe set by the teacher. These teachers strongly underscored the phases of the writing process (e.g., drafting or editing), focused often on the mechanics of writing (grammar), but provided little guidance about how to improve writing. They also tended to teach writing as a preparation for the future.

Teachers who tended to agree with an interactionist view of learning (i.e., a view that considers the active participation of the students to the various phases of instruction fundamental) accorded a greater centrality to the children in the learning process, tended to involve the students in authentic and more varied writing practices, organized the writing process in a more flexible and recursive fashion, and acknowledged greater ownership to the students on their own writing process. Explicit instruction on how to improve particular aspects of writing was provided through mini-lessons and, most of all, through individual conferences that actually

constituted the core of the instructional program. Peer revision and peer conferences were also encouraged.

Unfortunately, a detailed description of the beliefs tested by Lipson et al. (2000) was not provided; references were made only to an unpublished manuscript. It is difficult, therefore, to evaluate the epistemic nature of the beliefs investigated by the study. Nevertheless, given the centrality and cross-disciplinary nature of writing in schooling, this study offers important insights for further inquiry.

Zohar, Degani, and Vaaknin (2001) focused their research on the influence that teachers' beliefs about learning have on the inclusion (or exclusion) of low-achieving students in learning activities targeting higher-order thinking. Zohar et al. (2001) found that many of the high-school and junior-high teachers participating in their study believed that higher-order thinking was inappropriate for low-achieving students. The teachers perceived the cognitive demands of these tasks above these students' capabilities. This view correlated to a view of learning as linear and sequential, following a hierarchical path in which complex understanding could occur only after accumulation and mastering of prerequisite learning. Conceiving learning as a progression from more simple, lower-order cognitive tasks, to higher-order thinking tended to imply the setting of different instructional goals for low and high achievers. These results may offer further elements for a critical consideration of practices such as tracking. Unfortunately, Zohar et al. also found that the participation in professional development classes did not influence teachers' practices toward low-achievers, since that participation failed to challenge beliefs about learning and teaching.

In the domain of physics, Elby (2001) offered a powerful example of how epistemic cognition development can be directly targeted by a teacher who lists it as a preeminent goal of instruction. In this case, the researcher is simultaneously the teacher of two physics classes. Elby defined epistemological beliefs as the “views about what it means to learn and understand physics” (p. 54). In particular, he tried to develop in the students a view of physics as a connected web of ideas, and of learning physics as a process aiming at “relating fundamental concepts to problem-solving techniques” (p. 54).

To reach this goal, Elby embedded epistemological lessons, such as Einstein’s view that science is the refinement of everyday thinking, within the labs, problems, and class discussions designed to foster conceptual development. He carefully chose and sequenced both the experiments and the follow-up reflections on the experience to push students’ epistemic thinking, continuously challenging the students to reconcile their intuitions with their conceptual understanding. He was also ready to capitalize on students’ reactions to foster both conceptual and epistemic reasoning. Elby also pointed out that the role of the instructor, especially during the follow-up discussions, was extensive.

Further, the focus on epistemic development required that all aspects of instruction, from the choice and sequence of materials and learning experiences, to homework and evaluation formats, were informed by such perspective and carefully planned. For example, homework often included questions fostering reflection about learning. In order to encourage personal and honest reflection, Elby’s grading was based on completeness and thoughtfulness rather than on the solution content of

students' responses. To encourage a true engagement with the material, Elby handed out detailed solutions of the homework. Mini-quiz and comprehensive tests evaluated conceptual understanding.

Finally, Elby noted that, in order to be successful, the implementation of the plan required the active and watchful presence of the teacher throughout all the steps and the building of a classroom climate in which reflection about learning was as nurtured and praised as conceptual understanding. This open commitment to epistemic development provided the rationale for accepting inevitable trade-offs in terms of student learning outcomes. Content coverage was in fact reduced and students' final school-based exam had to be adjusted.

Focusing on History

Because epistemic cognition presumably varies with the degree of individual expertise in a particular domain (Alexander, 2003; Wineburg, 1991), it is likely that knowledge of the specific subject-matter also affects the instructional choices made by teachers. One example is provided by Gillaspie and Davis (1998). The researchers asked three elementary student teachers to read a series of accounts about the bombing of Hiroshima and to write a historical narrative about the event. Primary and secondary sources were provided. Students' think aloud protocols, together with their compositions, were examined to infer the ability of these prospective teachers to think historically.

The historical narratives of two student teachers did not refer to any of the sources provided, and even if the think-aloud protocols registered an emotional reaction to the accounts, neither the authenticity nor the reliability of the sources were

evaluated. The narrative of the third student teacher reflected his awareness of a conflict among the accounts, but no evaluation criteria emerged. In the end, the narrative referred only to those sources that better fit the student's conclusions. After completion of the task, these prospective teachers were asked whether they would have used source documents in their own teaching and how. They referred to the different perspectives afforded by the plurality of sources and to their emotional impact; two strategies that per se do not foster an awareness in pupils of the nature of historical narratives nor the development of criteria for dealing with historical evidence.

A similar study focused on three secondary social studies student teachers (Bohan & Davis, Jr., 1998). Also in this case, multiple sources dealing with the dropping of the atomic bomb on Hiroshima were used. The relations between student teachers' reading of historical sources, their writing of a historical narrative based on the documents, and their ideas about how to use this material in the classroom are similar to what Gillaspie and Davis found (1998). Only one of the student teacher, Rebecca, used heuristics aiming at identifying the author's perspective and the general historical context, paying attention to nuances in language and integrating her background knowledge. Acknowledging that the sources offered different points of view, Rebecca concluded that she could use the documents in class to discuss historical judgment. It is important to note that Rebecca was the only student teacher in the study who reported to have used primary sources in her history class and wrote research papers based on these documents. Compared with the other teachers participating in the study, her background knowledge was broader.

The other two participants, Alexa and Julie, did not pay attention to issues of perspective and context, limiting themselves at summarizing the information provided in the historical sources and expressing their agreement or disagreement with the point of view conveyed by the documents. Thus, they tended to build a two-sided view of the events surrounding the dropping of the bomb, but were unable to go beyond the dichotomy. Although their reading of the documents was similar in many respects, their written narrative differed. Alexa wrote a persuasive essay, advocating her own point of view and implicitly referring to sources that could support it. Julie chose not to commit herself to any side, even if she implied that there was a true story to be known. Both essays lacked explicit reference to and discussion of the evidence provided by the sources. Yet, both Alexa and Julie concluded that they would use the documents to show that there can be different sides to a story and that students should be encouraged to form their own opinions.

In contrast, the interpretive nature of history and the use of disciplinary tools, such as sourcing, corroboration, and evaluation of reliability of evidence, were at the very core of VanSledright's (2002) teaching to a fifth-grade class. This study, in which the teacher and the researcher were the same person, affords a rich description of how beliefs drive pedagogical choices. Convinced of the power of thinking historically, VanSledright questioned the nature of historical accounts with his students. He involved the children in historical investigations, which provided the occasion to experience some of the problems that historians face in their inquiries about the past. His use of a variety of sources highlighting different perspectives of events aimed at two main goals; dispelling the view of history as an established

narrative about the past and teaching, at the same time, heuristics useful to construct arguments based on evidence.

The preference accorded to group work and the way in which children were occasionally assigned to particular roles aimed at the same goals. For example, students who seemed unable to consider the British point of view during the Revolutionary War were assigned the role of journalists for a British newspaper. The same rationale supported the choice of sacrificing some breadth in coverage in order to provide the time for exposing students to the process of historical investigation. Such clarity of intentions did not dispel the tension coming from time constraints, although it supplied pedagogical consistency to the educational intervention. During whole class discussions, as on a more individual level throughout the group work, the role of the teacher remained fundamental in fostering epistemic awareness and the development of historical thinking, challenging the students to accept the discomfort of uncertainty without giving into helpless suspicion. Finally, assessment was construed to test students' progression in the ability to think historically.

Building on a similar view of history as a unique way of knowing the world through a process of inquiry shared by a community of professionals, Bain (2000, 2005) designed a series of activities explicitly targeting students' beliefs about the nature of history, and challenging the traditional view of history as a bundle of past facts. For example, high-school students were asked to write an account of their first day of school and read it aloud. The discussion that followed underscored the great variance in terms of details chosen and perspective adopted and provided the teacher the opportunity to introduce the distinction between history and the past. The teacher

developed linguistic tools (in this particular case, he introduced the use of the terms history-as-event and history-as-account) to assist students' thinking. He used these terms regularly, convinced that changing habits of thinking requires repeated exposure.

In terms of general planning, Bain organized the curriculum around meaningful historical problems. Then, he used a variety of materials and techniques to foster learning of history and of historical thinking, underscoring the indivisible nature of these processes. In his class, there was space for primary and secondary sources, textbooks, lecturing, and individual and group work. The overarching goal of involving students in the study of historical problems while teaching them how to manage the task generated a broad array of pedagogical tools that supported students' learning.

Bain used journal writing to make student thinking as visible as possible and encouraged their questioning. However, he went beyond the usual KWL (what do you know, what do you want to know, what did you learn) prompting students to assess how new evidence and accounts supported, extended, or contested their previous understanding of the historical event investigated. He also introduced the students to the vocabulary shared by the professional community. Issues of evidence, significance, validity, and form of accounts were examined through journal writing, readings, and class discussion.

Throughout the year, students were also asked to create narratives from the events recalled in the units of study, to externalize their initial thoughts and perspectives on historical issues, to "dialogue" with the text through writing, and to

monitor their own thinking by keeping journals. The classroom environment supported students' work providing a forum for discussion and exchange and letting students experience the complexities of historical thinking by making each one of them responsible for the employment of a particular heuristic (e.g., sourcing, perspective, corroboration of evidence, and reliability).

Yet, one may object that VanSledright and Bain are not typical history teachers. They are both professional history educators, with degrees in history, and extensive teaching experience. Would teachers with more limited academic and professional background suggest similar relations between epistemic stances and pedagogical choices? An exploratory study of how high school teachers think about historical text offered a further glimpse into the relation between teachers' views of history and their planned pedagogical approaches (Yeager & Davis, 1996).

Replicating Wineburg's (1991) study on the reading of historical texts by novices and experts, the researchers found that Meredith, a teacher who tended to conceive history as constructed, approached the documents looking for the author's voice. Similarly to the historians in Wineburg's study, Meredith looked for author's perspective, context in which the document originated, audience, and nuances in language. She repeatedly spoke about how she would use those documents in her classroom to foster historical thinking, encouraging students to pay attention to details and context, to compare and contrast different sources, and to be sensitive to instances of bias even when embedded in the seemingly objective tone of textbooks.

In contrast, Julie, who tended to view history as a "story to be brought to life" (p. 155), said that she liked to use in her classroom sources able to grab students'

attention, clear, and entertaining. In examining the comments made by Julie while she was reading the documents provided, the researchers found little evidence that she was using any of the heuristics typical of expertise. For example, Julie's dismissal of the textbook was motivated by its lack of "soap-opera-ish" appeal (p. 157); yet, she perceived it as the source reporting "fact, fact, fact, just tells you what happened" (p. 157), and concluded that she would use the textbook as a reliable tool to supply facts and information, adding more spicy sources to enliven the narrative.

Like Julie, Jordan seemed to locate historical knowledge directly in the sources. However, while Julie was looking for appeal, Jordan focused on accuracy. Pedagogically, this view prompted an emphasis on the analysis of historical text in order to identify what information was "correct" and what information was not (p. 159). In addition, Jordan tended to define context as an outline of events relevant for the documents to be provided to students in order to facilitate understanding. Yet, he did not consider contextual factors during his own reading of the documents. Jordan was aware that sources have a specific point of view, but he seemed to understand the issue of perspective in terms of ability of taking sides. In the end, believing that analyzing historical documents was a task too difficult for his students, and that it would have required too much time, he concluded that teaching historical thinking was impractical.

The conclusions one can draw from this study are tempered by the fact that teachers were only prompted to talk about the pedagogical use of historical documents and not observed during their work in the classrooms. However, the findings corroborate the trend emerged in the Bohan and Davis (1998) and Gillaspie

and Davis (1998) studies, as in a few other projects summarized in a recent review of cognitive research in history (VanSledright & Limon, 2006). Considered together, these studies indicate that the influence of teachers' epistemic stances on their goals and their teaching may actually be pervasive.

The same trend emerges also from the multiple case studies research conducted in Britain by Husbands, Kitson, and Pendry (2003), although the view of history that seems to prevail among these British teachers differs from the one surfacing from studies of their American colleagues. For their studies, Husbands and his colleagues selected eight heads of history departments in British high schools. The research tried to capture the relation between teachers' classroom skills, teachers' knowledge, and pedagogy. Even if teachers' epistemic cognition was not an explicit focus of the study, it emerged as a dimension of subject knowledge, influencing not only what pedagogical approaches were chosen, but also the way in which specific instructional strategies were used in the classrooms. For example, a few teachers demonstrated a broad, well integrated web of content and procedural knowledge, encompassed by a view of history as "setting questions, finding out, coming across the problems of methodology, patterns being thrown up that then raise finding out more" (p. 71). When observed teaching their students, the use of documents

was not sterile 'source work'; there was no hunting out and shooting down of bias, nor meaningless questions about reliability and usefulness. While the sources of evidence used by the teachers and pupils were often interrogated in these terms – What does this show us? Why does it show us that? What doesn't it show us? – this was in the context of a real historical question. 'Doing history' was the focus of these lessons – not 'doing sources'. (2003, p. 70).

At the same time, different goals seemed to drive different lessons.

Sometimes teachers focused on developing historical understanding; other times their objective regarded a particular life skill, such as understanding films as sources of evidence, or a curricular driven goal. Choice of particular material also took into account students' interest and classroom dynamics. However, similarly to what was reported in the VanSledright's and Bain's studies, teachers' understanding of the nature of history and, thus, what they wanted their students to understand, profoundly influenced goals and choice of resources and activities (Husbands et al., 2003, p.93).

In contrast to the British findings, a large United States survey examining the impact of web-based historical sources on the use of primary sources in the classroom suggested that "doing source work" mainly consisted in using these sources to support the narrative provided by the textbook or some other scholarship. Teachers' responses indicated that primary sources were mainly used to identifying key individuals, events, or ideas, comparing and contrasting details across multiple sources, detecting and evaluating bias, distortion, or propaganda, and providing a sense of the conditions of the period under study (Hicks, Doolittle, & Lee, 2004, p. 224-225). Teachers also indicated that primary sources were used to engage in historical interpretation. However, fewer than half of the respondents indicated that sources were interrogated based on the context in which they were generated. This study did not directly assess teachers' views about the nature of history. Yet, the purposes indicated by the teachers in using primary sources in the classroom, seem to suggest that they viewed history (or at least school-history) as something contained in some source of information.

Other Beliefs Influencing Teachers' Pedagogical Moves

The correlational nature of the studies reviewed so far does not support claims of causality and suggests the search for other factors that may explain the observed relations. In other words, beliefs that are not epistemic in nature may contribute or compete with teachers' epistemic beliefs in prompting particular pedagogical decisions. For this reason, I believe that it might be useful to look at those studies that investigated what kind of beliefs may favor the adoption of particular instructional strategies. For research purposes, considering the possible role played by other beliefs in the choice of specific pedagogical approaches may help us to identify the unique role played by teachers' epistemic beliefs. Further, a better understanding of beliefs particularly influential on teachers' practice may also provide useful suggestions for the design of effective teachers' education programs.

The study of Pajares and Graham (1998) provides an example of an attitude that can strongly interfere with teachers' beliefs and their preferences for certain pedagogical choices. Twenty-seven middle-school language arts teachers were shown a hypothetical student's free verse poem. They were asked how they would respond to a student who wanted to know whether they liked the poem and whether the poem was good. During the interview, teachers were also invited to express their judgment on the writer's work freely. Even if teachers mentioned that they would engage in some form of instruction about the craft of poetry, the most prominent belief emerging was that "a teacher must always respond positively" (p. 860). Independently of their beliefs about the epistemic status of poetry, the concern most often mentioned in teachers' responses was psychological in nature (e.g., providing

positive reinforcements or nurturing self-confidence). Pajares and Graham named the “proclivity of individuals to turn the findings of research into formal principles” formalism, and observed that, in so doing, people develop beliefs that become rigidly applicable, independent of any context considerations.

Teachers also expressed the beliefs that “criticism is the enemy of creativity,” “evaluative questions should be redirected to the students,” “students’ work should, above all, be praised and encouraged,” and that “poetry is a relative enterprise that cannot be evaluated.” Only rarely did teachers provide a more contextualized response, taking into consideration the particular student involved and the existing relationship with the teacher. Moreover, they never considered the possibility that caring for the well-being of the student might entail grounding the teaching conversation on mutual trusts and truth, together with providing strategies that may foster the development of actual subject-matter expertise in the student.

Are the formal principles expressed by these teachers aspects of a more general, albeit tacit, epistemic thinking? Although more research is needed to answer this question, it seems that, taken at face value, these statements portray a way of thinking in which arguments do not need to be supported by evidence. In this respect, they reveal a specific stance in respect to some aspects of epistemic thinking and, as such, may increase our understanding of the relation between teachers’ beliefs and teaching strategies.

Another important aspect that can potentially affect the relation between teachers’ beliefs and teaching strategies implemented in the classroom is highlighted in a case study of a Title I reading teacher (Davis & Wilson, 1999). Deb, an

experienced reading teacher, was selected for a first study in 1991, as she was teaching third grade. She also agreed to participate in a follow-up study eight years later, as a seventh-grade reading teacher. While her overall beliefs about reading did not change and her instruction was, for the most part, consistent with her beliefs in a reader-centered approach in which learning occurred mainly through induction, her pedagogy changed when she had to prepare her students for state-mandated tests.

In this case, teaching became teacher-generated, mainly deductive, and instruction of specific skills took the place of the holistic approach that better reflected the participant's espoused beliefs. Another occurrence that challenged the participant was the different environment she encountered in the middle school. A general focus on the subject matter, perceived as independent of the learners, and the more crystallized reading habits of her students fostered a sense of disconnection with the junior-high environment. These challenges notwithstanding, Deb did not change her basic approach, maintaining a high degree of consistency with her beliefs, but developed a sense of isolation from her colleagues; a factor that might affect teachers with different personalities or beliefs' structure.

The influence of classroom and teacher characteristics on teachers' beliefs and practices was investigated in a study involving early elementary teachers (Buchanan, Burts, Bidner, White, & Charlesworth, 1998). Participants (277 first, second, and third grade teachers) responded to a survey developed following the guidelines for appropriate teaching practices stated by the National Association for the Education of Young Children (NAEYC). According to the NAEYC, learning is facilitated by teachers that make instructional choices keeping in mind current theories about child

development and learning, individual children's strengths, interests, and needs, together with the social and cultural context in which students live. Even if the NAEYC guidelines do not pose a stark dichotomy between child-initiated and teacher-directed practices, they generally support child-initiated and hands-on activities, giving space to teacher-directed activities mainly in response to individuals' needs.

The researchers found an overall positive correlation between teachers' beliefs and teachers' practices. Regression analysis also found that both class characteristics and teacher characteristics predicted, albeit in small measure, the practices employed. In particular, the number of children on free lunches and higher number of children per class predicted developmentally inappropriate practices, while grade level and presence of children with disability in the classroom predicted developmentally appropriate practices (with first grade teachers scoring higher than the other teachers). Among teacher variables, the amount of influence teachers believed they had on planning and implementation of the curriculum most strongly predicted developmentally appropriate beliefs and low scores on developmentally inappropriate practices.

The preliminary nature of the study and in particular some measurement problems (e.g., low variance captured) do not allow strong claims about the relations identified. The definition of developmentally appropriate and inappropriate beliefs and practice reflected in the survey also invite some caution. Nevertheless, the relations found highlight the importance of considering the link between teachers'

beliefs and practices within the broader web of relations in which they develop and are enacted.

Another important factor in influencing teacher pedagogical choices is highlighted by Gudmundsdottir and Shulman (1987) in a study comparing an expert and a novice social studies teacher. Their findings suggest a close relation between the degree in which teachers are able to blend knowledge of content, knowledge of learners, and knowledge of curriculum and the pedagogical choices they make. This “blend” constitutes what Shulman defined pedagogical content knowledge (1986). In particular, Harry, the expert teacher, was well aware that different stories could be emphasized. Using his extensive content knowledge, he was thus able to organize his classes around the story he chose to privilege, choosing the strategies that best fit his objectives, while remaining fully aware of the drawbacks of his decisions.

Chris, his novice colleague, lacked the ability to weight potentials and drawbacks of different curricular and pedagogical choices and often relied on the organization of the subject matter proposed in the textbook to organize his classes. Both teachers seemed to be aware of the epistemic status of the discipline they taught, but, in addition to his extensive teaching expertise, Harry happened to teach the subject he also knew as a scholar. On the contrary, Chris was teaching, for the most part, topics that were out of his area of academic expertise. This factor makes it difficult to disentangle the possible influence of teacher epistemic stances on their pedagogical moves and, more generally, to draw conclusions about the relative role played by pedagogical knowledge in teachers’ choices.

Summary

A few studies (Bain, 2000, 2005; Elby's, 2001; Husbands et al., 2003; VanSledright's, 2002) highlight that teaching is a complex and holistic process, in which teacher epistemic commitment plays a pivotal role. In other words, teachers' epistemic stances provided meaning and justification to pedagogical moves and informed how selected instructional strategies were implemented in the classroom. Was this still the case when teacher epistemic commitment was less overt and epistemic development was not openly included among the goals of instruction? Even if the nature and the modest number of participants in the studies reviewed so far do not allow for generalization, their findings are not incompatible with this hypothesis.

In fact, teacher epistemic stance influenced, for example, preference for problem-based or memorization of results approach (Brickhouse, 1990), choice of content (Brickhouse, 1990), interpretation of students' responses (Hashweh, 1996), justification for the use of primary sources in the teaching of history (Bohan & Davis, 1998; Gillaspie & Davis, 1998; Yeager & Davis, 1996), and goal setting for low versus high-achieving students (Zohar et al., 2001). In my view, the broad character of the pedagogical moves that were found to correlate with teachers' beliefs about knowledge and learning support the hypothesis that teachers' epistemic stances may act as catalysts, driving teacher decisions in terms of goal setting and purposes pursued through the implementation of specific instructional strategies (Husbands et al., 2003).

It is also interesting to note that teachers who seemed to view evidence as granting direct access to the past, or equated it to disembodied information, tended to use primary sources to support and enrich a given narrative. When conflict among sources arose, they tended to build polarized narratives, and indicated that they would leave students free to form their own opinion. From an epistemic point of view, this relation is noteworthy, because it suggests that what appears in teachers as a pre-reflective epistemic stance (in Kitchener's model) tends to foster pedagogical moves that typify quasi-reflective stances. Within the history domain, this relation is understandable. If historical evidence is conceived as a characteristic of the source and not as the results of a dialogue between the investigator and the remnants of the past, conflict among sources is not solvable. Appealing to the authority of an established narrative or "bailing out" and leave the choice to the students would be, within this stance, two equally plausible options. I will return to this point in the third section of this review, examining the models of progression in historical thinking offered in the literature.

Teachers' Pedagogical Choices—Students' Epistemic Stances

Contributions from Various Domains

The adoption of specific teaching strategies is usually justified with reference to specific goals and students' outcomes that those approaches tend to foster (Burden, & Byrd, 1999; Wiggins & McTighe, 1998). Studies that investigate these latter relations are summarized in the next section. A number of individual and social mediators and moderators can be hypothesized to affect the relation between teachers' interventions and students' performance and have been extensively studied

in the literature (Alexander, 2003; Bandura, 1997; Bronfenbrenner, 1989; Eccles, Wigfield, & Schiefele, 1998; Kuklinski & Weinstein, 2001; Pajares, 1996; Pintrich, Marx, & Boyle, 1993; Wentzel, 1998). In line with the topic of this review, this section highlights those research projects that studied the relation between teachers' pedagogical moves and changes in students' epistemic stances.

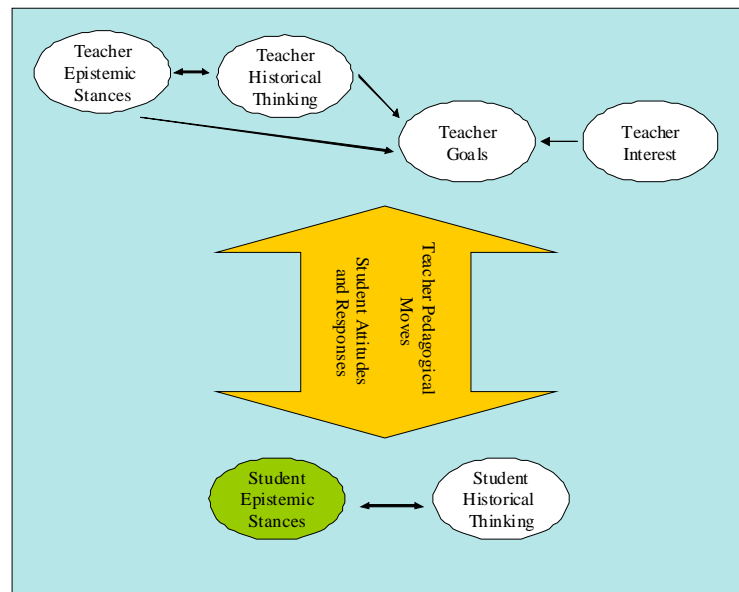


Figure 3: Aspects of the theoretical model addressed in this section

By establishing this focus, I do not wish to imply that student beliefs are the only moderator or mediator affecting the relation between teachers' pedagogical moves and students' learning outcome. Other individual and social variables surely merit careful consideration, but they exceed the purpose of the present review. In this section, I focus therefore on the relation between teaching strategies and students' epistemic stances, using results from a variety of studies that did not necessarily have investigation of this construct as their prime goal. Table 2.2 provides a summary of these studies.

Windschitl and Andre (1998) studied the effects on conceptual change of an instructional strategy reflecting the theoretical views of cognitive constructivism (Cobb, 1994). According to this view, individual experiences and personal reflection on these experiences prompt a unique construction of knowledge within the individual. Focusing on 250 college students enrolled in a human anatomy and physiology survey course, Windschitl and Andre (1998) found an interesting interaction effect between students' epistemological beliefs and the mode of instruction. All students participated in a recitation class. During the laboratory hours, students in the experimental group were exposed to computer-based simulation exercises dealing with the cardio-vascular system. A set of hypothetical cases targeting the most common misconceptions was presented to the students, who had the opportunity to formulate and test their predictions. The intervention of the instructor was minimal. Students in the control group also used the computer simulations, but in this case they were asked to follow detailed procedures that guided them to the desired answers.

Students' epistemological beliefs were assessed at the beginning of the intervention using the 63-items of Schommer's Epistemological Questionnaire (SEQ) (Schommer, 1990). An index of student epistemological beliefs was created by calculating the mean value of the 12 subset means. This variable was entered in a regression equation after controlling for pretest score on a knowledge measure, recitation instructor, and group (experimental or control). The interaction effect between group and epistemological beliefs was significant. Main effect for epistemological beliefs was also significant. In particular, students who were

classified as more epistemologically sophisticated, according to Schommer's measure, performed better in the exploratory condition, while students with less sophisticated beliefs performed more poorly in such condition. The reverse was true in the control condition.

Schommer's questionnaire taps dimensions of epistemological beliefs such as the simplicity (vs. complexity) of knowledge, quick learning (vs. learning over time), certainty of knowledge (vs. knowledge as context-dependent), and deterministic innate ability (vs. ability to learn how to learn). It includes, therefore, dimensions related to the view of the learning process, which more intuitively should correlate with the facilitating effect of determinate learning settings. It would have been interesting to know which dimensions were more responsible for the interaction and whether student epistemological beliefs (and not only conceptual change) were affected by the experimental condition. Unfortunately, the design and analysis of the study do not offer this information. Other problems linked to this particular measure are discussed in the next section and have been addressed also in the literature (Wood & Kardash, 2002).

Nevertheless, Windschitl and Andre's (1998) study opens interesting avenues for further research by reaffirming the centrality and uniqueness of the individual student in the learning process. In other words, these results show that there is no pedagogical approach, be it constructivist or not, that "fits all." It would be almost ironic if, in the attempt to foster an aspect of development so deeply engrained and personally significant as epistemic cognition, educators would move indiscriminately

from a content-centered to a strategy-centered approach, discounting the reality of individual students' current beliefs.

Jehng and his colleagues (1993) investigated how different learning environments affect epistemic development. They studied the epistemological beliefs of undergraduate and graduate students in four different majors: engineering and natural sciences, business, social science, and arts and humanities. The researchers developed an epistemology scale based on Schommer's (1990) and Spiro's (1989) measures. Confirmatory factor analysis showed compatibility with a five-factor structure of epistemological beliefs measured by the scale (*certainty of knowledge, omniscient authority, orderly process, innate ability, and quick learning*).

The investigators found that graduate students had significantly higher scores than undergraduates on the three dimensions that are more strictly epistemic in nature (i.e., *certainty of knowledge, omniscient authority, and orderly process*). Similarly, students in so-called "soft fields," such as the social science and the arts/humanities, also scored higher than students in "hard fields," such as engineering/natural sciences and business. Both comparisons did not show significant differences for the two learning components of the measure (i.e., *innate ability and quick learning*).

Even if the correlational nature of the study does not permit establishing causality or direction between epistemic development and learning environment, it is possible that the more open-ended instructional setting of graduate courses, in which contrasting viewpoints are often presented and discussed, favors epistemic development. Analogously, the less rigid overall climate of the "soft-field," together

with the greater exposure to ill-structured problems may also foster a perception of knowledge as less certain and less structured.

Another study involving 290 college students majoring in different fields partially supported the aforementioned hypothesis (Paulsen & Wells, 1998). The researchers used the 63-items SEQ and, through a series of regressions, studied the contribution of gender, age, grade level, GPA, and domain of study to the variance across the four dimensions identified by Schommer's questionnaire (i.e., fixed ability, simple knowledge, quick learning, and certain knowledge). With respect to the current topic, Paulsen and Wells found that students majoring in soft fields were less likely to hold naïve beliefs about the certainty of knowledge. Even if results go in the expected direction, they invite some caution, since scores were calculated on the untested assumption that a four-factor solution was compatible with the data.

Two of the studies mentioned in the previous sections assessed the change in students' beliefs following instruction explicitly targeting epistemic development. Elby (2001) used two different epistemological assessments, the Maryland Physics Expectations Survey (MPEX), developed by Redish, Saul, and Steinberg (1998) and the Epistemological Beliefs Assessment for Physical Science (EBAPS), developed by White and her colleagues (1999). The MPEX measures both epistemological beliefs about knowledge and students' expectations about the course, while the EBAPS assesses epistemology alone.

The dimensions probed by the MPEX and the EBAPS partially overlap, since both instruments targeted the structure of knowledge (i.e., physics as a collection of pieces or as a whole), the nature of learning (i.e., learning as acquisition of

information or as construction of understanding), and real-life applicability (i.e., physics as connected to the lives outside the classroom). MPEX further explored mathematic integration (i.e., math equations as disconnected tools or as descriptors of conceptual relations), conceptual nature of physics (i.e., physics as a series of formulas or as a system of concepts), and effort (i.e., effort as conducive to success in the class). EBAPS further investigated evolving knowledge (i.e., physics knowledge as more tentative than settled), and the source of ability to learn (i.e., learning as more a matter of fixed ability or of effort coupled with effective strategies).

The changes detected by both measures suggested that an explicit focus on epistemology can affect students' beliefs. This remained true both in honor classes and in slower-paced courses. Without direct targeting epistemic development, previous studies of interventions employing research-based, reform-oriented curricula showed gains in learning, but no overall change in students' beliefs (Redish et al., 1998). Interestingly, students did not manifest equal gains on all the dimensions explored by the EBAPS. The scores increased more on those dimensions that were directly targeted by curricular intervention, supporting the claim of the researchers that epistemic concerns should be infused in the curriculum in order to affect students' beliefs.

The influence of teachers' pedagogy on young learners is explored in a case study by McNeal (1995). The researcher observed Jamey as he transitioned from a second grade, experimental inquiry-based mathematic class to a third grade textbook-based class. Teachers' beliefs about the nature of mathematics and the learning process were implicitly derived from the different strategies applied in the classroom.

Implied beliefs appear sometimes more evidently from the transcripts of classroom's interactions.

In his second grade class, Jamey engaged in mathematical activity framed "as the construction of relationships among personally real mathematical objects," where solutions were "validated by the community of learners as a whole, rather than by the teacher or the textbook" (McNeal, 1995, p. 209). Students developed various algorithms to solve problems that did not necessarily follow the traditional procedures suggested by most textbooks. These alternative constructions tended to be quite stable in time, and most importantly for the purpose of this review, they underscored a view of mathematics as a tool that "ought to make sense" (p. 212).

In third grade, the understanding of mathematical procedures became the focus of instruction. Understanding was stressed by the use of several strategies (e.g., manipulation of objects or problem solving). However, the interactions between teachers and students deeply changed. Over and over again, the teachers directed the children to the "right" procedures, in order to avoid mistakes. The focus was not so much on the problem to be solved, but on the recall of steps decided by an external authority. The evaluation of children's work privileged the number of problems attempted in a certain time, discouraging persistence in understanding. Further, the children's questions tended to address the requirements of the assignment more than the mathematical content of problems. The dialogues between the teacher and the students, strongly teacher-centered and teacher-directed, also discouraged the construction of alternative methods, and in the end of comprehension.

Students quickly shifted to a new kind of interaction and their goal also shifted; from the solution of the problem at hand, to the search for the teacher's expected answer. Even if this was not the intention of the teacher, Jamey's beliefs of mathematics also shifted, and after eight weeks in third grade, mathematics had become something that, at least in school, had more to do with remembering and following procedures than something that had to make sense. In this case, his achievement was also negatively affected, even if this does not always have to be the case. If mathematics does not have to make sense at school, children might even perform well, not out of understanding, but in recognition of authority.

Does epistemic development always require the sort of holistic commitment exemplified in the previous studies? Harry Shipman was a professor teaching a non-major astronomy course and an advocate for reforming undergraduate science education in the direction of becoming more demanding in terms of understanding. He wanted to ascertain whether his instruction met the goal of teaching about the nature of science (Brickhouse, Dagher, Shipman, & Letts, 2002). The course served a large number of students (n=340) and so the prevalent teaching approach was the traditional lecture. However, to stimulate students' thinking, the professor used small group work during class and several of the assignments and test questions demanded extensive writing.

To investigate the effectiveness of his teaching, the professor asked for the help of a research team that interviewed a sample of students' representative of the different educational majors three times and examined students' responses to assignments and exams. In particular, the researchers focused on three aspects of

students' learning (i.e., the nature of evidence, the relation between science and religion, and the nature of theories).

The study found that students' views differed markedly across topics. For example, almost all the students failed to recognize gravity as a theory and talked about it only in terms of force or law. Perceived as a mere "fact," the students did not feel the need to provide any justification for their belief in it. In the case of evolution, the students were able to distinguish between the explanatory purpose of the theory and the evidence it provides, citing some evidence in support of it, but at the same time casting the issue mostly in terms of personal opinions. In contrast, students justified beliefs in terms of evidence in the case of the Big Bang. Nevertheless, this was the theory that left the students more doubtful, with the most common reason for their skepticism being the indirect nature of the evidence. Students tended to find biology claims more credible than astronomy claims, since the first dealt with tangible objects, while astronomical observations were mediated and limited by the available technology. Interestingly, no student mentioned microbiology.

Overall, the Brickhouse et al. (2002) study underscored that students' understanding deeply varies across contexts, suggesting that challenging the dogmatic view of science with respect to specific domains is not enough to foster epistemic shifts. In this case, it is actually possible that students concluded that knowledge in that particular domain was not as certain as that produced in other fields, without feeling challenged in their general epistemic assumptions.

In a further analysis of data coming from this study and focusing more specifically on students' understanding of the nature of scientific theories, Dagher,

Brickhouse, Shipman, and Letts (2004) found that the moderate changes observed for some of the students' representations were insufficient to claim the occurrence of major epistemic shifts. Reflecting on the course curricula in the light of the data collected through the interviews, they concluded that a more explicit discussion of words like "law," "theory," and "proof" would have been desirable, since students' use of these terms revealed deeply entrenched misconceptions. In addition, even when students perceived the tentativeness of theories, they tended to ascribe such status to the lack of experimental evidence, and not to epistemic reasons (e.g., the nature of the inductive process).

Finally, the results of Brickhouse et al. (2002) and Dagher et al. (2004) studies support the hypothesis that affecting students' epistemic stances requires designing educational experiences that explicitly challenge students' thinking across contexts and over a sustained period of time; a goal perhaps at odds with the large class typical of many introductory undergraduate courses. Moreover, talking about epistemological issues may not be enough. In fact, careful choice of reading assignments and the support given by the instructor during the lectures to the view that theories are explanations based on evidence were not enough to affect students' beliefs.

This hypothesis is further supported by a study of English undergraduate students' images of science (Ryder, Leach, & Driver, 1999). Researchers interviewed 11 undergraduates while they were working on their final year research project, a work that involved students in original scientific research, usually for the first time. Interviews were collected at the beginning of the project and about five months later.

Researchers found that, during the course of the project, more students came to see knowledge claims as provable on empirical grounds or referred to the importance of a critical approach to experimentation in scientific work.

Echoing findings of the Brickhouse et al. (2002) study, researchers observed a difference across different scientific fields. In particular, only students from earth science raised the issue that knowledge claims can go beyond the data, thus making proof problematic. The researchers interpreted this result as an indication that students' image of science can better be characterized by a profile of images rather than as a single, coherent view. Students also increasingly came to realize the role of theory in guiding the questions that scientists choose to investigate. Moreover, the interviews highlighted that different kinds of research project differently affected students' epistemic development. For example, projects that required students to relate data to knowledge claims supported a greater development in epistemic reasoning than projects more focused on experimental techniques. Among the triggers of epistemic reflection, students also mentioned discussions with lecturers about the history of science

Outside the scientific domain, the role of teaching strategies in fostering epistemic cognition was investigated in a study focusing on the development of argumentative reasoning (Kuhn, Shaw, & Felton, 1997). Researchers found that adults and adolescents who participated in five weeks of dyadic discussions about capital punishment increased, improved, on average, the quality of their reasoning about the issue, becoming increasingly more able to consider alternatives, providing justifications for their stance, and manifesting a growing self-awareness of the status

of their thinking (their certainty or their conflict). Individuals who participated only in the pretest and posttest and individuals who were only asked to talk once on the phone about the issue and write a two-page statement on the topic following the conversation did not show improvement in thinking.

The influence of the learning environment on students' explaining and understanding of chemistry is illustrated by a case study involving twelfth graders (McRobbie, & Thomas, 2000). Even if the researchers do not explicitly refer to epistemic change, the new curriculum introduced in the class focused on fostering reasoning in terms of theories and evidence, an important aspect of epistemic cognition.

In this case study, the researchers collaborated with the teacher of a 12th grade chemistry class. The goal was to change the learning environment from a teacher-centered approach (e.g., based on extensive use of textbook and focused on completion of numeric problems and routine laboratory activities) to a place where students were encouraged to develop their own understanding. In particular, students were encouraged to explain phenomena using a three-level model of explanation (i.e., descriptive or phenomenon-based level; empirical relational level; theory or model-based level). The teacher, who at the beginning of the intervention did not believe in the ability of the students to think at the level required by the new curriculum, also had to change the way in which she perceived her role, becoming both a learner and a model of the expected thinking.

Experiments and instruction sheets were modified to foster the goals set and students were encouraged to engage in discussions with other class-members to

develop consensus based on evidence. Quantitative and qualitative instruments monitored the intervention. Results indicated that students perceived the increased focus on their thinking and understood the changed aim of the experiments (i.e., from proving theories developed by others to disproving students' emerging theories). Students also acquired a discourse that enabled them to discuss different levels of explanation and increase their overall understanding.

Unfortunately, from the results reported it is not easy to understand whether students perceived the change only at the level of their learning experience, or whether their view of chemistry changed, as well. This may be a consequence of the theoretical framework of the study, emphasizing the social constructivist approach over the investigation of change in epistemic cognition. In their interviews, students also stressed that the change generated some anxiety and confusion; they found it particularly problematic to be forced to decrease their reliance on the textbook and to live with the uncertainty fostered by the more open-ended approach. These concerns echo the fifth graders in VanSledright's (2002) class in their effort to build historical understanding and suggest the potentiality of this approach to foster epistemic development.

It is also important to note that the trust between teacher and students developed during the previous years favored the receptivity to change in this chemistry classroom. The centrality of trust is also highlighted within the very different context of a medical school (Mifflin, Campbell, & Price, 1999, 2000). In the Mifflin et al. studies, the lack of a shared set of beliefs among teachers and students prevented the students from taking advantage of a teaching approach similar in

principle to that described in the previous study. The researchers monitored the introduction of a problem-based, graduate entry course in a medical school and found that the teachers viewed the implementation of this strategy as a way to develop self-directed, lifelong learners. By contrast, the students perceived it as an inappropriate lack of guidance that, far from fostering self-direction, deprived the students from a proper introduction to the fundamental principle of the discipline, causing useless loss of time and energy. An explicit sharing of the learning objectives with the students together with support, especially during the initial phases of the process, remains fundamental for the successful achievement of the learning goals.

The importance of students' epistemic stances in the learning process, and the need for teachers to be aware of them, is underscored also in a study by Hammer (1995). In this case study, Hammer reversed the order of the relations investigated and considered how students' beliefs, affecting learning outcomes (solution to a physics problem), influenced the teacher's pedagogical choices. Teacher epistemic stances, far from being absent from the process, were viewed as the lens through which students' responses were perceived in the first place, and also as core influences on the teacher's strategic decisions. Therefore, Hammer's study illustrates the importance of looking at what happens in the classroom as a circular, more than as a linear process, in which teacher and student beliefs interact and influence each other and the learning outcomes.

Focusing on History

In the history domain, studies focusing on the relation between teachers' pedagogical moves and students' epistemic stances are scarce. However, results of

available studies tend to echo what has been found in other domains. In VanSledright's study (2002), eight fifth-graders, selected in such a way to represent a broad range of abilities within the class, served as informants. An interview conducted prior to the beginning of the intervention investigated children's epistemic stances about history. In general, students expressed the view that history was "what happened before what's happening right now" (p. 114), with a majority of them adding the idea that history dealt only with important people and events. For the most part, children had no idea about the work of historians, apart from some speculations about writing of books and record keeping. When asked how historians arbitrate disputes about what happened in the past, the most prevalent answers suggested appealing to a majority vote or to an indisputable source like an encyclopedia. Only a couple of students referred to the possibility of combining different, even if incoherent, stories, or to follow one's beliefs, once was exhausted the available evidence.

The resilience of what VanSledright termed an "encyclopedia epistemology" (p. 76) surfaced again throughout the four months during which he taught this fifth-grade class, prompting him to challenge it by focusing on the role of perspective in historical thinking. Once challenged with conflicting sources, students seemed to abandon this initial reliance on an external authority to espouse the view that no account could be trust, a position indicative of an epistemology that still placed the truth of the historical account in some evidence "out there," without recognizing the role of the historian in the individuation and evaluation of evidence. Similarly to the undergraduates in the Brickhouse et al. (2002) and Dagher et al. (2004) studies, who

ascribed the tentativeness of scientific theories to the lack of experimental evidence, these fifth graders attributed historical indeterminacy to lack of factual information or to the deceitfulness of witnesses and not to the interpretive nature of history.

When interviewed at the end of the intervention, students still defined history as what happened in the past, although they dropped the idea that it regarded only great events. The greatest shift in their thinking regarded the role of the historian, who was conceived as someone comparing and contrasting evidence emerging from various accounts and sorting among interpretations by weighting the evidence used to support historical arguments. All students referred to the importance of looking at the source of the accounts and considering the perspective of the historical witnesses. Thus, they seemed to have espoused the view that historians follow some criteria in the generation of historical knowledge, even if the informants voiced the complex, hard, and sometimes inconclusive nature of this interpretive task.

The detailed descriptions of students' reactions to an investigative approach also highlight how differences in epistemic (and probably cognitive and motivational) stances affected the way in which students responded to the intellectual discomfort introduced by this method. While some students took seriously the challenge of building arguments and involved themselves in passionate discussions about the reliability of the evidence used to back different interpretations, others transformed what had been presented as "detective work" to the common "research project," concentrating on finding the right answers to the questions asked, without doing any source work. The explicit, continuous monitoring on the teacher part of these epistemic shifts (or lack thereof) was therefore a fundamental component in

VanSledright's intervention and influenced the planning of further instructional activities.

As in Elby's (2001) case, at the end of the study these fifth graders demonstrated a shift in their epistemic stances aligned to the goals of instruction. Their young age and diverse academic abilities challenge the practice of postponing the consideration of epistemic issues to graduate studies, showing that children are capable of dealing with such issues if taught to do so. How this change in thinking may influence students' outcomes is discussed in the next section.

Similarly, high-school students in Bain's (2000) class also developed a view of history in which interpretation played a central role. Yet, as a result, some students adopted a questioning stance that served them well in the investigation of the world around them, but some others embraced a cynical relativism that prevented a productive engagement with reality. The data reported make speculating about what factors may prompt such different reactions very difficult.

Summary

An important indication emerging from these studies is that students' epistemic changes probably require a holistic approach, sustained in time (Elby, 2001; McNeal, 1995; VanSledright, 2002). Differences in epistemological beliefs found in students majoring in different fields support this insight (Jehng et al., 1993; Paulsen & Wells, 1998). Further, it seems that epistemic issues need to be explicitly discussed with students in order to foster epistemic change (Brickhouse et al., 2002; Dagher et al., 2004; Ryder et al., 1999).

Yet, different students tended to respond differently to pedagogical approaches aiming at fostering epistemic development (Windschitl & Andre, 1998). Being able to monitor students' epistemic stances becomes thus important to choose the intervention that best fit individual needs at a certain moment in time. In terms of research design, these studies also suggest the need to control for other cognitive and motivational variables that may moderate the effect of teachers' pedagogical decisions.

Finally, it appeared that unveiling the uncertain nature of knowledge does not suffice per se to move students toward a reflective epistemic stance (in Kitchener's terms). It seems that until students conceive knowledge as something directly springing forth from raw data, confrontation with the conflicting or insufficient nature of evidence tends to foster a cognitive helplessness and motivational disengagement (Bain, 2000; Dagher et al., 2004). Providing students with criteria to evaluate evidence and build arguments based on such evidence appears to be critical; yet, students' responses vary (VanSledright, 2002; Windschitl & Andre, 1998).

Students' Epistemic Stances — Students' Outcomes

In this section, I review the results of studies examining the relation between students' epistemic beliefs and students' outcomes. In some cases, this link constitutes the only focus of the identified study. In other cases, the researchers examined this relation together with other phases of the teaching/learning process. Table 3 overviews these studies. Are some epistemic beliefs actually more conducive to desirable learning outcomes? Starting in the 1990s, several studies addressing this question adopted Schommer's (1990) conceptualization of epistemic beliefs as a

system. Most of these researchers also used Schommer's epistemological questionnaire or some modification of it. Therefore, it seems reasonable to start this section by examining this research framework. The same instrument also served to explore what could affect students' epistemological beliefs; a few studies addressing this question were summarized in the previous section (e.g., Jehng et. al., 1993; Paulsen & Wells, 1998; Windschitl & Andre, 1998).

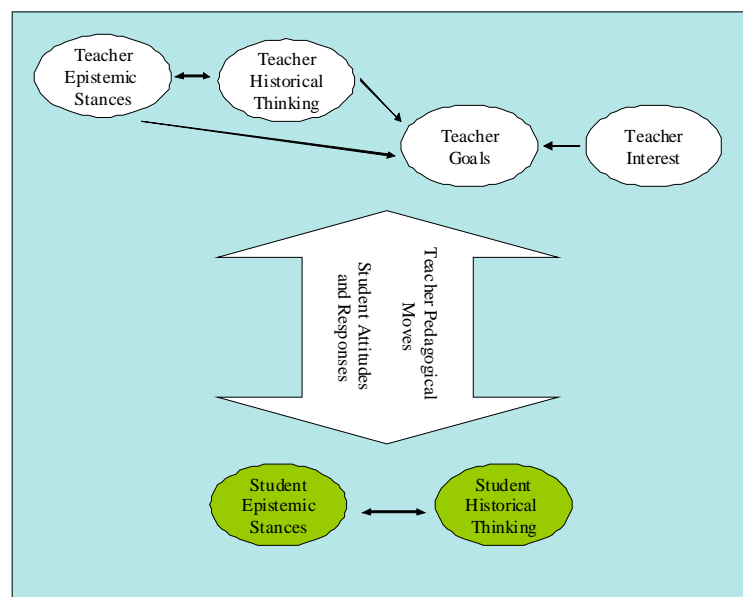


Figure 4. Aspects of the theoretical model addressed in this section

The Research on Epistemological Beliefs

The first major study within this line of research was reported in 1990 and tested two major hypotheses. The first regarded the compatibility of a conceptualization of epistemological beliefs as a system of substantially independent beliefs with data collected from 263 college students. The second hypothesis considered relations between epistemological beliefs and various aspects of students' comprehension. Based on a reinterpretation of the literature available at the time, Schommer constructed a 63-item questionnaire to assess five dimensions of

epistemological beliefs that she called *simple knowledge* (i.e., belief that knowledge is simple rather than complex), *omniscient authority* (i.e., belief that knowledge is handed down by authority rather than derived from reason), *certain knowledge* (i.e., belief that knowledge is certain rather than tentative), *innate ability* (i.e., belief that the ability to learn is innate rather than acquired), and *quick learning* (i.e., belief that learning is quick or not at all).

As discussed, while the first three dimensions directly addressed epistemological issues about the nature and justification of knowledge, the last two addressed beliefs about how people learn. The rationale for their inclusion was to develop research on motivation (Dweck & Leggett, 1988) and intelligence (Schoenfeld, 1983, 1985). Although there are good reasons to hypothesize that these beliefs influence learning, they do not target epistemic cognition per se. For this reason, in reporting the results of studies within this framework, results about nature and justification of knowledge and results about the acquisition of knowledge will be discussed separately to the degree possible.

Each of the five dimensions addressed by Schommer's questionnaire was characterized by two or three aspects, each aspect assessed by a specific subset of items. Factor analysis of data on these subsets generated four independent factors with eigenvalues greater than one accounting for 55.2% of the total variance; thus supporting the innovative view of epistemological beliefs as a system.

However, the factors yielded by the exploratory factor analysis were in part different from the original structure of the epistemological questionnaire. In particular, *omniscient authority* did not emerge from the analysis as a factor, since its

subsets loaded across three factors. In addition, some subsets loaded differently from what hypothesized. For example, items expressing preference for avoiding ambiguity did not load on *certain knowledge*, but on *simple knowledge* and items expressing beliefs that learning happens first time or not at all did not load on *quick learning* but on *innate ability*. Even if there was not a complete overlapping between the subsets originally characterizing each dimension and the factors emerged from the analysis, the four factors were named according to the original scheme, an occurrence that generated some confusion in further studies.

Finally, it is important to note that *subsets* of items and not the original 63 items were used in the factor analysis. No available analysis confirmed that items within each subset were actually indicative of the hypothesized dimensions, thus leaving the validity of the measure uncertain.

The second question addressed by the study regarded the relation between dimensions of epistemological beliefs and aspects of comprehension. Students were given either a psychology passage presenting different theories of aggression or a nutrition passage exploring the controversy about the optimal daily intake of vitamin B-6. The passages did not offer any conclusion and students were asked to write a conclusion paragraph. After controlling for social and personal background variables, Schommer found that students believing in quick learning tended to draw oversimplified conclusions, performed more poorly on the psychology mastery test, and tended to overestimate their understanding of the passages. Students believing that knowledge was more certain than tentative tended to draw certain conclusions, even in the face of controversial evidence.

Later studies provided some support for the SEQ's proposed factor structure. Responses from a new sample of undergraduate students yielded a fairly good fit for a four-factor model (Schommer, Crouse, & Rhodes, 1992). The main differences from the original study regarded the subset of items probing the belief in innate ability, which loaded together with the belief in quick learning. The subsets designed to investigate the belief in an omniscient authority loaded separately on *simple knowledge* and *certain knowledge*. Schommer and her colleagues also found that, when confronted with statistical text requiring integration of concepts, students who believed in simple knowledge tended to perform more poorly on a measure of comprehension, were overconfident about the degree of their understanding, and tended to choose less adaptive test preparation strategies (which in turn negatively correlated with comprehension). This result suggests that dimensions of epistemological beliefs may differently correlate with learning that occurs in various domains and context, a hypothesis also discussed by Elby (2001).

Replication in a cross-sectional study with high-school students also yielded a four factors structure fairly similar to the original one, even if subsets cross-loading increased (especially beliefs in quick learning) and beliefs about innate ability loaded together with beliefs in quick learning on the third factor (Schommer, 1993). Schommer also found that girls were less likely than boys to believe in quick learning and in fixed ability. Further, older students were less likely to believe in quick learning, simple knowledge, and certain knowledge. When students' IQ scores were entered in the prediction equation of student GPA, only belief in quick learning remained a significant predictor. Nevertheless, it is possible that the influence of

epistemological beliefs on GPA is more subtle, contextualized, and indirect than what the methodology of the study allowed to detect. It is also possible that the nature of learning reflected in high GPA's does not require the integration of knowledge and epistemic awareness measured by the other dimensions of the questionnaire. The deeper analyses afforded by case studies seem to support this hypothesis.

Further support for the multidimensionality of epistemological beliefs has been provided by Wood and Kardash (2002), who factor analyzed data collected from college students with an 80-item instrument comprising items from both Schommer's (1990) and Jehng's (1991; Jehng et al., 1993) questionnaires. Five factors emerged from the analysis, which only partially overlapped with those found in previous studies. In particular, Wood and Kardash factor-analyzed individual items, and not subsets of items, thus addressing issues of substantive validity of the questionnaires. The amount of variance accounted for after extraction was less than half the amount reported in previous studies that had factored subsets of items.

The first factor, *speed of knowledge acquisition*, addressed mainly beliefs about the process of learning, with low scores manifesting belief that learning is an "all or nothing," straightforward process, and it accounted for almost half of the variance extracted. Interestingly, three items loading on this factor were taken from Schommer's *knowledge is certain* and *seek single answers* subsets, an occurrence that supports the usefulness of factor analyzing single items, even if it makes the interpretation of the factors more complex and nuanced. The second factor, *structure of knowledge*, reflected beliefs on the more or less integrated nature of knowledge with low scores representing the "view that knowledge is composed by discrete and

unambiguous pieces of information” (p. 250). The third factor, *knowledge construction and modification*, addressed beliefs about the acquisition of knowledge, with low scores reflecting the view that knowledge does not require integration of information and involves an overall passive and unquestioning stance. Overall, the last two factors explained little more than 3% of the total variance and the internal consistency of the items was lower. The fourth factor, *characteristics of successful students*, mainly addressed beliefs about the innate ability to learn while the fifth factor, *attainability of truth*, comprised three items targeting beliefs about the possibility for scientists to discover the truth (both manifested by low scores on these items).

All five factors were inter-correlated, with particularly high correlations among *speed of knowledge acquisition*, *knowledge construction and modification*, and *characteristics of successful students*. This finding, together with the loading of subset items on diverse factors, suggests prudence in linking particular dimensions of epistemological beliefs to particular outcomes, since it seems that the dimensions so far investigated are closely interrelated, with beliefs about learning explaining the most part of variability and beliefs about the nature of knowledge still largely dodging detection.

Wood and Kardash also investigated whether epistemological beliefs could predict GPAs over and above ACT scores. Once again, the strongest contribution came from the *speed of knowledge acquisition* scale, accounting for an additional 4% of variance. *Characteristics of successful students*, *attainability of objective truth*, and *knowledge construction and modification* each accounted only for an additional

1% of variance. Besides suggesting important methodological implications, this study indicated that much work has still to be done in the development of research designs able to capture epistemic beliefs, particularly if researchers are interested in studying its role in reasoning and learning.

Using Schommer's questionnaire, several relations between epistemological beliefs and learning outcomes were explored. Qian and Alvermann (1995) found that items reflecting beliefs in certain and simple knowledge loaded on a common factor and predicted conceptual change in physics, but the three factor model that best fit the data explained only around 20% of the total variance.

Kardash and Scholes (1996) investigated the effect of beliefs in certain knowledge on the interpretation of text. Similarly to Schommer (1990), they presented college students with a dual-positional text reporting two different views about the relation between HIV and AIDS and asked students to write a conclusion paragraph. Analysis of the data fairly replicated Schommer's factor structure. Further, regression analysis used to predict the degree of tentativeness in the conclusion drawn revealed that scores on the four items tapping beliefs in certain knowledge accounted for 9% of unique variance. The result is particularly noteworthy, since the same analysis also found that need for cognition and strength of previous beliefs were unique predictors of the degree of tentativeness displayed in the conclusions.

A subsequent study (Kardash & Howell, 2000) extended the investigation to interactions between epistemological beliefs and topic-specific beliefs and cognitive and strategic processes used by undergraduates during the reading of a dual-positional

text. Factor analysis of data from the same 42-item epistemological beliefs questionnaire used previously did not replicate the factor structure emerged in the 1996 study, even if the certainty of knowledge factor kept emerging, accounting for 4% of the total variance. Students believing less in the certainty of knowledge tended to use more strategies aiming at making connections beyond individual words, phrase, or sentence level (intersentential ties). They also tended to make more statements revealing inaccurate text processing and to rate themselves less familiar with the text. Confirming previous results, stronger relations with strategies use emerged in relation to the *speed of learning* factor.

The relation between the ability to construct meaningful connections and epistemological beliefs was further explored by Bråten & Strømsø (2006) who found that students holding sophisticated epistemological beliefs (assessed by the total score on Schommer's 63-items questionnaire) performed significantly better than students holding naïve epistemological beliefs when asked to respond to a questionnaire assessing their ability to build inferences from the reading of multiple texts. Interestingly, students holding different epistemological beliefs performed quite similarly when asked to complete the same questionnaire after reading the same material presented in the format of a textbook-like single text.

The influence of epistemic disposition on the evaluation of argument strength was investigated by Stanovich and West (1997). These researchers found that undergraduates who scored high on a composite score indicating openness to belief change and cognitive flexibility (resembling the SEQ's *simple knowledge* and *certain knowledge* subscales) tended to evaluate the evidence provided by various arguments

independently from their previous beliefs. The result is noteworthy because, in this study, epistemic dispositions were unique predictors (6.7% unique variance explained) of the argument evaluation, even when other measures of cognitive abilities were taken into account. Further, in contrast to several other studies included in this review that presented participants with conflicting arguments, this study specifically investigated the ability of evaluating the strength (or weakness) of single arguments independently from personal beliefs on the issue, an attitude that is usually considered an important component of critical thinking.

Sinatra and her colleagues (2003) built a single composite measure of the sophistication of epistemological beliefs using only a few subsets of SEQ (i.e., *seek single answers*, *don't criticize authority*, *ambiguous information*, *dependence on authority*, and *certain knowledge*; Sinatra, Southerland, McConaughy, & Demastes, 2003). They studied the relation between this composite and the level of knowledge and acceptance of three different scientific theories (i.e., photosynthesis and respiration, animal evolution, and human evolution). The researchers found a moderate, negative correlation between this measure of epistemological beliefs and the degree of acceptance of human evolution, but no significant relation was found between epistemological beliefs and knowledge of evolution.

The modest reliability of the measure of epistemological beliefs weakens the aforementioned conclusions, even if results support the hypothesis that the interaction between epistemological beliefs and acceptance of scientific theories may vary in relation to their controversial status. The researchers also found that epistemic dispositions, measured with scales similar to those used in the Stanovich and West's

(1997) study, were a significant predictor of students' acceptance of human evolution. Yet, such dispositions did not predict acceptance of photosynthesis or animal evolution.

The view of epistemic beliefs as a system also inspired the research of Schraw, Dunkle, and Bendixen (1995). In this study, these researchers investigated the relation between various dimensions of epistemological beliefs and problem solving. They also dedicated much effort to the design and testing of a measurement instrument, the Epistemic Beliefs Inventory (EBI). This 32-item questionnaire attempted to capture the original five dimensions of epistemological beliefs hypothesized by Schommer. The researchers reported that factor analysis of the data yielded a five-factor solution as hypothesized, explaining about 60% of the total variance. Similar claims were made in further studies comparing analysis of data obtained through the contemporary administration of the EBI and Schommer's Questionnaire (Schraw, Bendixen, & Dunkle, 2002).

Inspection of the eigenvalues of the 5-factor solution reported in the articles does not support the claim, and it would seem that these factors accounted for a much lower percentage of the total variance (about 25%), unless several items were actually dropped from the questionnaire and analysis was repeated on a smaller item pool. Unfortunately, the data reported in the article do not resolve this issue. A further concern with data obtained through the administration of the EBI regards the items targeting the dimension of *certain knowledge* that tap, for the most part, beliefs regarding moral truth and the existence of absolute truth, introducing some confusion in the construct under investigation

Study of the relation between epistemological beliefs and problem solving found that the variables created as a composite of items loading on the *certainty of knowledge* and *omniscient authority* factors explained roughly 30% of variation of the performance on the ill-structured problem solving measure. The task requested participants to respond to the question “Is truth unchanging?” The resemblance of this question to the items in the questionnaire might explain in part the strong relation found. However, the generalizability of the result to other ill-structured problem solving situation is problematic. No relation was found between epistemological beliefs and performance on a measure of syllogistic reasoning, supporting the hypothesis that different problem solving activities require different cognitive processes that may not necessarily involve the epistemic level.

A few studies also began to investigate relations between epistemological beliefs and motivational constructs (Hofer, 1999; Paulsen & Feldman, 1999a). Results suggested moderate relations, especially between beliefs in *simple knowledge* and goal orientation, task value, control of learning, self-efficacy, and text anxiety (Paulsen & Feldman, 1999a). These findings were partially corroborated in the specific domain of mathematics (Hofer, 1999). Significant correlations also emerged with dimensions targeting beliefs about learning (*quick learning* and *fixed ability*).

The dimension of *certain knowledge* did not show any correlation with motivational measures. The paucity of results in this respect may also be due to measurement issues. Specifically, reliability of the epistemological beliefs scale in the Hofer’s study was modest and no factor analysis of the data was available for the Paulsen and Feldman’s study (1999a). Findings also suggest the need to

contextualize the study of such relations within a specific disciplinary domain (Paulsen & Feldman, 1999a). Finally, the correlational nature of the study does not allow speculation about the direction of the relations.

The relation between epistemological beliefs and self-regulated learning strategies was also explored by Paulsen and Feldman (1999b). They found that students scoring higher on the dimension of *simple knowledge* (tapped by the SEQ) tended to use more surface learning strategies, to employ less strategies aiming at integrating new information with prior knowledge and experience, to adopt less metacognitive strategies to plan, monitor, and regulate their learning, and to have less control on their effort and attention.

In addition, the dimension of *certain knowledge* did not predict any of the self-regulation variables considered in the study, while beliefs in fixed learning correlated with all the components of self-regulated learning strategies. It is important to note that data were not factor analyzed and composite scores were created on the basis of analysis reported in previous research. Finally, contrary to the methodology of several previous studies, all the measures employed by this study were self-reported measures.

Schreiber and Shinn (2003) used a similar design to study relations between dimensions of epistemological beliefs and learning processes. They found that students who scored high on the dimension of *simple knowledge* tended to prefer learning processes that emphasized the acquisition of factual information and completion of tasks in a step-by-step fashion. As in the previous studies, no

correlation was found with the dimension of *certain knowledge* and beliefs in *fixed ability* correlated with the learning processes students declared to use more often.

Contributions from Various Domains

A different insight into the relation between students' beliefs and learning outcomes is provided by some examples of qualitative research nested in specific disciplinary domains. Instead of focusing on the relation between general beliefs and decontextualized abilities, these researchers attempted to individuate aspects of epistemic cognition and learning outcomes typical of a specific domain.

The theoretical justification to situate the study of epistemology within specific domains comes from a growing body of research on expertise (Alexander, 2003; Wineburg, 1991). It is also compatible with views of individuals' epistemologies as a "range of cognitive resources for understanding knowledge," differently activated by different contexts, whose organization and availability to conscious reflection varies across degrees of expertise (Louca, Elby, Hammer, & Kagey, 2004). Pedagogically, this renewed attention to the domain specificity of learning has become visible in the national standards developed for various disciplines, such as history and science.

Davis (2003) investigated the relations between beliefs about scientific knowledge and science learning. Six eight-grade physical science classes, taught by the same teacher within a computer based learning environment (CLP/KIE) that encourages deep understanding of concepts, together with application and integration of knowledge, participated in the study. All 178 students completed pretest and

posttest measures assessing beliefs about the nature of science (i.e., its tentativeness vs. its immutability) and learning science.

Two aspects of learning science were investigated. First, the strategy employed by students (i.e., a focus on understanding vs. a focus on memorizing discrete facts); second, the degree of autonomy in learning (i.e., placing the responsibility for learning on oneself vs. placing the responsibility on someone else). All students also completed a performance task, requiring them to review an article about some of the topics addressed in class for a fictitious editor. The task evaluated the degree of connection among and conceptual validity of students' idea, as a measure of knowledge integration. A representative sub-group of the students was selected for further interviews to cross-validate the findings and to add a richer description of the relations emerging.

Beliefs in the tentativeness of science did not change significantly throughout the semester. The changes in students' autonomy and orientation toward learning for understanding were statistically significant, but effect sizes were small, further supporting the hypothesis that long time is needed to substantially affect students' beliefs. A considerable relation emerged between beliefs in the tentativeness of science and the use of strategies geared toward understanding, a link validated also by the analysis of students' interviews. This result indicated that students tended to behave reasonably in their approach to learning, leaning toward memorization if they perceived science as a collection of discrete fact, but opting for a deeper understanding if they conceived scientific knowledge as dynamic and based on evidence.

Surprisingly, neither beliefs in the tentativeness of science nor a preference for understanding correlated with the scores on the review task, although the degree of autonomy did. Yet, it is possible that the context of the study (i.e., strongly urging students to go beyond memorization) contributed to this result. It is also possible that the variance in beliefs captured by the dimensions investigated was too low to show significant correlations with the outcome measure. Further, students worked in pairs to write the review. The researchers took care to pair off students with similar initial beliefs; yet, it is possible that this occurrence affected the outcome and thus the correlation.

Some support for this last hypothesis is provided by a study of college students engaged in a computer-based simulation targeting some common misconceptions related to photosynthesis (Windschitl, 1997). Dyads were formed based on the scores obtained on a measure of the “belief in the complexity of acquiring knowledge,” an instrument that targeted epistemic dimensions similar to those addressed by Schommer’s questionnaire.

Regression analyses found that higher posttest scores of individuals predicted lower posttest scores of their partner. Observation of a subsample of dyads supported this result, since students who scored higher on the epistemic measure tended to assume a more directive and inquisitive role during the simulation exercise, while partners with lower scores played a more passive role, seemingly less conducive to learning. Thus, in terms of outcome, the exchange ultimately tended to generate a sort of “zero-sum” situation. Alternative explanations are nevertheless possible, and

research is needed to investigate how students' epistemological beliefs play out in collaborative learning settings.

Also in the mathematics domain, a few studies have considered the possible role that students' epistemic beliefs play in cognition and motivation and have been reviewed by Muis (2004). In general, correlations were found between students' beliefs and justification of answers, students' learning strategies, and achievement, supporting the hypotheses that students who approach mathematics as a purely empirical (vs. rational) activity, and believe that mathematics is essentially procedural, certain and simple tend to be unable to justify their answers to problems, to adopt mainly memorization strategies, and to reach lower levels of achievement and interest. While this literature supports the individuation of common trends, measurement and design issues quite similar to those discussed above prevent from providing strong evidence for cause-and-effect relations.

Did research establish any relation between students' epistemic stances and general learning outcomes measured by traditional tests? Elby's study (2001) offers an initial investigation of this question. Students in his honor physics class achieved an average score of 84% on the Force Concept Inventory, a level that the researcher notes is comparable to that obtained by post-test Harvard students. The slower-paced class did not take the FCI, but usually performed well on FCI-like questions that were included in class tests. Content coverage was reduced in this case, too, perhaps limiting the possibilities and the motivation of more capable students. However, the researcher concluded that the strong epistemic focus of his classes did not affect basic

conceptual development. Moreover, it is important to recall that, for Elby, epistemic development was regarded as a prominent educational outcome in itself.

Focusing on History

As mentioned in Chapter 1, the literature on historical thinking suggests the existence of important connections between epistemic beliefs and the ability of individuals to think historically (Lee & Shemilt, 2003; VanSledright, 2002; Wineburg, 2001a). In particular, second-order concepts (e.g., historical account and evidence) and use of heuristics that typify the process of historical investigation (e.g., sourcing, contextualization, and construction of evidence-based arguments) presuppose particular ideas about the nature of historical knowledge and the ways in which historical knowledge claims may be justified. Thus, from a psychological perspective, studying how people develop these concepts and strategies becomes a privileged way to look at their epistemic development in the domain.

In this regard, an important contribution was offered by a group of British researchers, who explored how second-order concepts such as evidence, causation, empathy, and nature of historical accounts developed across a group of students between the age of seven and fourteen (Lee & Ashby, 2000; Lee, Dickinson, & Ashby, 1997; Lee & Shemilt, 2003). The study involved 320 students who were asked to read three pairs of stories about three issues in European and British history. Within each pair, the stories differed in theme, tone, and time-scale. Students completed several written tasks and were also asked a few questions that more directly addressed their epistemic stances (Lee & Ashby, 2000, pp. 204-205). Students' written responses were compared to results obtained by interviewing a sub-

sample of pupils. Using a similar method, the study was then extended to other 92 children, who were interviewed at the beginning of the spring and at the end of the summer term. A longitudinal study (from second to fourth grade) also took place and involved 22 children.

Based on these data, the researchers developed a progression of students' ideas about history and about the past. For the purposes of this review, I focus on the progression of students' idea about evidence and about the relation between historical accounts and the past (Lee & Ashby, 2000; Lee & Shemilt, 2003). At the first level in this progression, students viewed evidence as granting direct access to the past; in other words, they perceived the past as given and historical accounts as something existing "out there." At the second level, students likened evidence to information, still equating history to the past as known by some authority. Lack of information made the past inaccessible and writing historical accounts impossible.

At the third level, students became aware that most of the traces of the past were in the form of human witnesses; this instance brought issues of bias and loss of information to the forefront. In addition, accounts came to depend on the information available. At the fourth level, students struggled with issues of truthfulness within each source and accounts became the results of an operation of "scissor and paste." Only at the fifth level of the progression, students began to distinguish the role of the historical investigators, who selects and organizes the evidence and writes the accounts. The ability of the investigator to interrogate the sources, asking questions that they were not specifically designed to answer and corroborating results, became a key element in the generation of historical knowledge, since it allowed overcoming

issues of bias. Finally, at the sixth level, concern for the historical context and for the question addressed by the specific accounts acquired importance.

However, even if some general trends were identified, these researchers caution from assuming a rigid, stage-like conceptualization of this progression. Their findings indicate that, at any given age, student individual differences were noteworthy and second-order concepts did not develop in parallel fashion. In addition, changes in how students performed specific tasks (e.g., comparing pairs of sources) did not necessarily imply epistemic development.

In schools, history is usually perceived as a subject heavily imbued with reading tasks. Do students' epistemic stances affect their way of reading historical texts? Sam Wineburg (2001b) compared historians and a group of high achieving high school seniors reading historical accounts about the events at Lexington Green. He found that the two groups mainly differed in their way of conceiving what a text *was*. More specifically, historians focused on understanding the subtext of the documents, that is they tried to infer the author's purposes and goals in writing the account in that specific way. In contrast, the students analyzed the texts looking for information, failing to recognize the presence of an author. Very different ideas about the nature of historical accounts seem to lay beneath these profoundly different approaches to the text. In particular, the idea that history is already written in the text prevented students from engaging with its author. They processed the text, but they failed to comprehend it. Particularly interesting in this respect is the instance that the students in Wineburg's (2001b) study used several cognitive and metacognitive strategies that the reading literature identifies as features of good readers of single

text, but those were of little avail in building understanding out of multiple historical texts.

These findings are supported by a few studies implemented by Rouet and her colleagues (1998), involving American and French undergraduate and graduate students, with varied degree of specialization in the history domain. Participants were asked to read a set of documents regarding the building of the Panama Canal. Then, students were asked to rank the documents in terms of usefulness and trustworthiness, to justify their rankings, and to write an essay discussing to what extent the US intervention in the Panamanian revolution was justified.

Researchers found that all students had some knowledge about different genres and were able to identify different points of view. However, novices and history experts differed in the criteria used in ranking the documents. In particular, when confronted by issues of bias, novices lowered their trust in the document, while history expert were able to appreciate the contribution of sources even if biased. In addition, experts evaluated the documents using multiple criteria. They analyzed them in terms of content and in terms of authorship, and also tested their usefulness in terms of the question investigated. Novices tended to look at the documents mainly in terms of content. In the case of primary sources, novices considered the perspective of the author, too; yet, they tended to dismiss the source as biased, preferring to place their trust in the textbook.

Analyses of the essays indicated that novices and experts included citation of the documents in their writing. However, experts referred to the documents to build a coherent argument, comparing and contrasting sources and discussing their reliability.

Novices seemed less aware of the conflicting nature of the documents provided and, for the most part, avoided addressing this issue. Although these studies do not explicitly assess nor refer to epistemic cognition, they suggest that differences in expertise may be reflected more in the purpose served by specific strategy (e.g., aid in the interpretation and evaluation of different texts) than in the use of the strategies itself (Wineburg, 2007).

Yet, given that the differences emerging between novices and experts regard, for the most part, the nature of historical accounts and the justification of historical claim, I believe that these findings are compatible with the hypothesis that epistemic stances influence reading and writing in history. An alternative hypothesis could be that these differences are mainly due to a different level of domain knowledge. After all, the experts in the Rouet et al.'s studies were graduate history students with several years of exposure to the discipline. However, if second-order concepts like evidence and accounts are considered an integral part of disciplinary knowledge, the two hypotheses are actually not incompatible.

Summary

Research on epistemological beliefs suggests that beliefs in the tentativeness of science and, more generally, in the constructive, complex, and uncertain nature of knowledge tend to correlate with adaptive learning outcomes. However, methodological and theoretical considerations may suggest alternative interpretations of these findings. These issues are discussed in more detail in the last section of this review. In summarizing the studies of this section, and especially in comparing

findings from the research on epistemological beliefs and contributions from research nested in specific domains, one element seems to emerge with particular clarity.

The scales used to assess epistemological beliefs do not discriminate between beliefs reflecting an overall relativistic stance and beliefs reflecting the acquisition of criteria that enable students to build knowledge and justify claims even under condition of uncertainty. In other words, the beliefs in the uncertain nature of knowledge tend to be considered an index of epistemic sophistication *per se*, independently from the development of criteria that allow students to learn and build knowledge even under condition of uncertainty. From this point of view, research nested in the history domain offers a much more nuanced representation of competent epistemic beliefs, describing progression in historical thinking, and indicating the implications of these different stances in terms of learning, with particular reference to reading and writing in the history domain.

Teachers' Pedagogical Choices—Students' Learning Outcomes

The influence that different teaching strategies have on various students' learning outcomes is documented by a broad literature that surpasses the limits of this review. In line with the goals of the present analysis, this section includes only those few studies specifically investigating the effect of strategies aiming at fostering key aspects of epistemic cognition, such as argumentation, hypothesis testing, and evaluation of evidence.

Continuing the investigation on the effects of teaching higher-order thinking to low-achievers, Zohar and Dori (2003) examined the outcomes of four programs for high- and junior-high school students aiming at fostering question-posing capabilities,

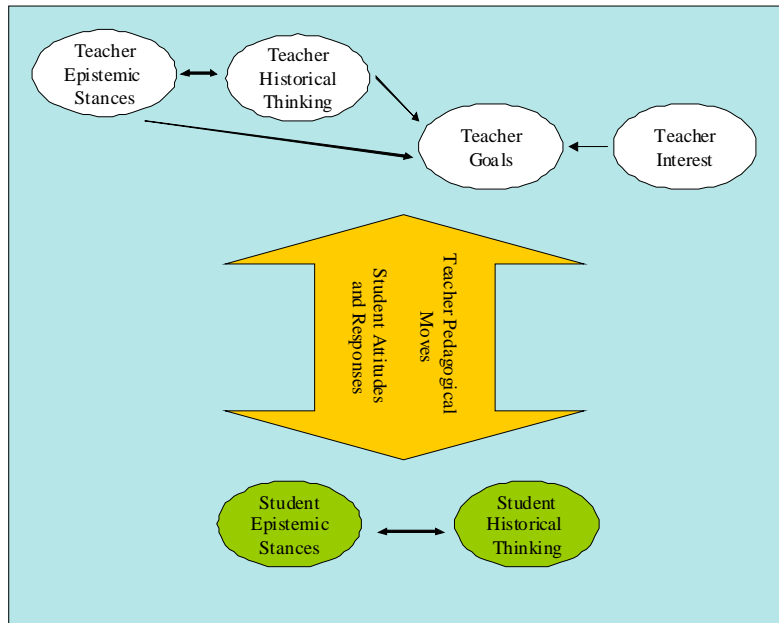


Figure 5: Aspects of the theoretical model addressed in this section

argumentation skills, system thinking skills (i.e., identify and analyze relations within complex systems), and critical and scientific thinking (e.g., hypothesis testing and evaluation of evidence). It is important to note that these programs involved about 1000 students in different settings (urban, rural; middle-class, heterogeneous socioeconomic background; secular, religious) and were quasi-experimental in nature. Data about pretest and posttest on a series of measures were collected and, in two studies, data from control groups were gathered and analyzed, as well.

In these programs, the teaching skills were embedded in various curricular areas (science) and involved the students both at a procedural (e.g., solving a problem) and at a metacognitive level (e.g., reflection on the thinking skills used and generalizations about how and when to use such skills). After completing the specific task assigned (procedural level), the students were guided in a reflection on the thinking skills that had been used and prompted to transfer those skills to novel situations (different school subjects or everyday life). The researchers found that low

achievers benefited as much as (and sometimes more than) high achievers from the teaching of higher-order thinking, increasing their performance on content-knowledge based tasks as well. This supports the results described in some of the case studies previously summarized (Elby, 2001; VanSledright, 2002).

Evidence of transfer also emerged in the Zohar et al. (2001) study, making these results even more compelling. In terms of teaching strategies, fostering higher-order thinking with low achievers may well require greater scaffolding, such as breaking up complex tasks into simpler components, identifying steps, or giving clues and examples. However, the researchers' claim that this does imply lowering the level of thinking at which students are engaged. The importance of teachers' strategies is therefore two-fold. In the first place, these strategies help determine the level of thinking targeted by instruction. Further, they provide appropriate support to make possible the pursuit of these learning goals for all students.

The effectiveness of interventions targeting higher order thinking, both in term of student success and also in the relatively short time requested to obtain positive results is impressive. One of these intervention studies was a quasi-experiment examining the teaching of argumentation skills in the context of dilemmas in genetics (Zohar & Nemet, 2002). The researchers compared the outcomes in terms of both argumentation skills and content knowledge between two groups of ninth graders enrolled in a biology class. The experimental group was taught a unit in the curriculum (genetic revolution) through the examination of moral dilemmas and explicit teaching of argumentation skills (e.g., formulation of arguments and counterarguments and their justification). The control group was taught the same

information following a more traditional, “textbook” approach. In the latter case, standard application problems followed the transmission of the relevant information. The unit comprised approximately twelve lessons.

The qualitative and quantitative analysis of the data showed that students in the experimental group increasingly used biological evidence to construct arguments about proposed dilemmas. They also scored significantly higher on a multiple-choice knowledge test administered at the end of the unit. This last result offers a new, encouraging perspective on the relation between teaching content and teaching thinking, an occurrence especially important in high-stake testing environments. It challenges the “time constraint” argument often used to question the viability of teaching thinking. It may in fact be that the time taken to develop student epistemic cognition pays off also in terms of the amount of content knowledge that students are able to retain. Finally, the interactions within the classroom also changed significantly, and the researchers found that the students increased the frequency with which they supported their conclusion with explicit evidence, another aspect highlighted by many case studies (McRobbie et al., 2001; Elby, 2001; VanSledright, 2002).

Focusing on History

Is it necessary that epistemic beliefs become a direct target of instruction in order to influence students’ reading of historical texts? In VanSledright’s study (2002), students’ epistemic stances were repeatedly challenged and epistemic cognition became the target of explicit instruction. Did students’ reading and writing in history change? In order to assess what students were able to do with what they knew, that

is, to investigate their ability to think historically, VanSledright (2002) constructed two performance tasks, which asked the fifth-graders to read, analyze, interpret, and draw inferences from a set of primary and secondary sources provided to them. The first assessment was administered before the beginning of the intervention, the second once it was completed.

The analysis of the think aloud protocols of the eight informants revealed that all students increased the use of those reading strategies and thinking practices typical of experts, moving from an almost exclusively intratextual reading, to the adoption of intertextual comprehension strategies, identifying and corroborating sources, evaluating the accounts' point of view, their validity and reliability. Even if students' final outcomes differed, overall reflecting the initial disparities among the children, all students improved their ability to deal with and make meaning out of contrasting historical accounts. Compared with the high school seniors in Wineburg's (2001b) study, the results are particularly significant. Further, these findings corroborate what Kardash and Howell (2000) found. These researchers noticed that students who believed less in the certainty of knowledge tended to use more strategies aiming at building intersential ties (similar to VanSledright's intertextual comprehension strategies) during the reading of a dual-positional text. Such texts are similar to the reading of conflicting historical sources. In this respect, the similarity between elementary and college students is quite remarkable.

Works produced by VanSledright's students during the intervention attests to an engagement with the disciplinary content much broader and deeper than what is usually experienced in a traditional, textbook based, fifth-grade social studies class.

Did these students also retain more factual information about what they investigated? Cognitive theories would support this hypothesis, but no data on some standardized measure of learning were available. Interviews with the classroom teacher highlighted increased student motivation and development in thinking, together with the reduced coverage of the content assessed through state testing. A trade-off often faced by educators that want to incorporate epistemic development in their curricula.

The importance of considering students' epistemic stances in a particular discipline is indicated also by a study involving college students (mainly freshmen) attending adjunct study strategy courses aiming at supporting academic success in three different classes (i.e., biology, chemistry, and history; Simpson & Rush, 2003). In particular, instructors analyzed the tasks required in the specific discipline and taught cognitive, metacognitive, and self-regulatory processes favoring a positive performance on these tasks. Even if not explicitly investigating epistemic beliefs, the researchers noted that success in the history class required ability to synthesize multiple sources, create generalizations, and answer thought-provoking essay questions.

The strategy course in history challenged students' view of history as a collection of facts and dates and succeeded in changing students' beliefs more than the strategy courses in the other disciplines. Students also stated that they would more likely transfer to other domains the strategies learned in history. Correlation between change in beliefs and academic performance was also higher in the case of the history class.

In the study described in the previous section, Bain (2000) also noted that high-school students exposed to a history course explicitly targeting epistemic cognition learned to read texts in a much more sophisticated manner, using the tools of historical thinking. Finally, the hypothesis that instruction plays a major role in fostering students' ability to think historically is also supported by the studies of Lee and Ashby (2000), who found that, on average, students differed across schools in terms of their responses to the reading and writing tasks administered in the course of their research.

Summary

The studies reviewed in this section highlight the key role that appropriate pedagogical practices can play in the development of higher-order thinking, in general and of historical thinking, in particular. They also suggest that successful interventions take care to explicitly address students' epistemic beliefs and include the teaching of cognitive and metacognitive strategies that foster learning in that particular domain. These research projects also contribute to dispel the notion that higher-order thinking is an appropriate goal only for high-achieving students or that only students in the upper grades can be taught to think historically.

Suggestions from the Reviewed Literature

Although most of the studies reviewed cannot claim causality, their corroborative evidence suggests that epistemic beliefs and epistemic cognition matter in learning and teaching. Several studies indicate that the more teachers are aware of the epistemic status of the discipline taught, the more they tend to develop strategies aimed at fostering a similar consciousness in their students (Brickhouse, 1990;

Hashweh, 1996). This awareness usually goes hand in hand with a greater knowledge of the subject matter (Gillaspie & Davis, 1998) and with the acknowledgment that the development of epistemic cognition is a valuable educational goal (Elby, 2001; VanSledright, 2002).

Commitment to epistemic development required a more student-centered approach and thus a different presence of the teacher in the classroom. Yet, it also required that the teacher carefully planned and vigilantly implemented all phases of instruction (Elby, 2001; Vansledright, 2002). It also seems that while sporadic interventions did not trigger epistemic development, successful interventions tended to infuse the whole curriculum across a sustained period, from goal planning to assessment.

Research also pointed out a few features of the educational system that may affect teachers' beliefs about the nature of knowledge and learning and their pedagogical choices. In particular, the amount of influence that teachers believed they had on the curriculum implemented in their classroom was found to be a strong predictor of their willingness to adopt less conventional teaching strategies (Buchanan et al., 1996). Teachers' own knowledge of the disciplinary content of the subject matter and familiarity with the cognitive and metacognitive processes involved in learning were repeatedly found to predict teachers' beliefs and teachers' strategies (Arabsolghar & Elkins, 2001; Brickhouse, 1990; McNeal, 1995; Zohar, 1999).

Comparisons between results of quantitative and qualitative studies indicate that much work is still needed to identify epistemic beliefs and aspects of epistemic cognition that holds consistently and meaningfully across studies. Thus, in evaluating

the effect of students' beliefs on students' outcomes, it is particularly important to keep in mind the limits of the methodology used to tap epistemological beliefs and therefore to evaluate critically the constructs actually investigated. A recent study by DeBacker and her colleagues tested the psychometric properties of three of the most often used measures (i.e., Schommer's Epistemological Questionnaire, Epistemic Beliefs Inventory, and the Epistemological Beliefs Survey) and found them problematic (DeBacker, Crowson, Beesley, Thoma, & Hestevold, 2008).

The definition and measurement of epistemic sophistication in several studies is also problematic, because it does not consider individuals beliefs about the justification of knowledge claims. Thus, research misses the opportunity to tap into a key dimension that emerged from the developmental work of Perry (1970), King and Kitchener (2002), and Kuhn and Weinstock (2002), failing to discriminate between beliefs reflecting an overall relativistic stance, and beliefs reflecting the acquisition of criteria that enable the individual to build knowledge even under conditions of uncertainty.

The pedagogical consequences are important. There is evidence (at least from case studies) that students who are made aware of the uncertain nature of knowledge without developing criteria to draw at least provisional conclusions from the evidence available tend to develop a skeptic, "everything goes" kind of attitude, a stance that does not foster engagement with the reality investigated by the subject matter. On the contrary, a position that, acknowledging the limits of knowledge, proposes effective criteria to cope with uncertainty, empowers students to engage in inquiry, to interact

deeply with the material at hand, and overall to participate more fully in the domain discourse (Bain, 2000; Lee & Shemilt, 2003; VanSledright, 2002).

Investigating epistemic cognition within knowledge domains seems a promising avenue to further our understanding of how epistemic beliefs emerge within school settings, how they likely develop, and how they influence teaching and learning. It may also bring research a step further in identifying which beliefs are more or less adaptive to specific educational goals.

Given the relative novelty of research about teacher epistemic cognition, the contributions of case studies for our understanding are particularly noteworthy. The insights gained from such in depth studies can also suggest what key variables should be included in quantitative measures tapping teachers' epistemic stances. This effort could make feasible the extension to a larger population of the investigation about relations between teachers' epistemic stances and teachers' pedagogical moves, thus contributing to the generalizability of results. Moreover, only few studies simultaneously investigated all the relations hypothesized in the theoretical model. Hence, in respect to epistemic cognition, our understanding of what "goes on" in an actual classroom context is still rough. By studying the development of epistemic beliefs and epistemic cognition within three history classrooms, this study aims at contributing to enhance such understanding.

Table 2.1

The Relation between Teachers' Epistemic Stances and Teachers' Pedagogical Choices: Summary of Studies

Study	Design	Domain	Teachers' Beliefs	Teaching Strategies
Bain (2000, 2005)	CS	History	History as inquiry shared by a professional community	↔ Explicit discussion of epistemic status of history Development of linguistic tools Organization of the curriculum around meaningful historical problems Use of various sources Individual and group work Fostering student reflection
Brickhouse (1990)	CS	Science	Theories as problem-solving tools Scientific process is theory-driven Scientific progress as theory change Theories as truth gained through experimentation Scientific progress as accumulation of facts Scientific process purely inductive	↔ Problem-based teaching approach ↔ Centrality of prediction in experiments ↔ Reinterpretation of previous laws and concepts ↔ Memorization; stress on precision in experimentation ↔ Scarce attention to integration of knowledge ↔ Avoidance of potentially conflicting content
Bohan, C., & Davis, O. Jr. (1998)	CS	History	Historical documents have a subtext Historical documents as biased information	↔ Discussion on historical judgment ↔ Different perspectives generates a dichotomous view of the events. Students are left to their own opinions.
Buchanan et al. (1998)	S	General	Belief in cognitive developmental theories	↔ Child-initiated and hand-on activities

Davis & Wilson (1999)	CS	Reading	Beliefs in reader's centered approach	↔	Induction
Elby (2001)	CS	Physics	Physics as a connected web of ideas Learning physics as relating concepts to problem solving techniques	↔	Problems and class discussions fostering a reconciliation between intuitions and conceptual understanding Attention to students' beliefs Active teacher's role during class discussions Great attention to sequencing of learning experiences (from materials to assessment) Willingness to accept a reduction in coverage
Gillaspie & Davis (1998)	E	History	Ability to think historically	↔	Use of various sources only to provide multiple perspective and for their emotional impact
Gudmundsdottir, & Shulman (1987)	CS	History	Teaching history as possibility tell different stories Low pedagogical knowledge	↔	Awareness of potentialities and drawback of specific pedagogical choices
Hashweh (1996)	E	Science	Constructivist beliefs about knowing and learning	↔	Emphasis on active role of the learner Attention to alternative conceptions and need for conceptual change Centrality of theory Use of refutation, persuasion, and solicitation of questioning
			Empiricist beliefs	↔	Rehearse of "correct answers" Repeat explanations Interpretation of "wrong" answer as procedural failings

Hicks et al. (2004)	S	Social Studies	Not directly addressed, but history as information	↔	Primary sources are used to add information, identify bias, and do historical interpretation. However context is largely ignored.
Husbands et al. (2003)	CS	History	History as disciplinary inquiry	↔	Epistemic cognition as part of subject knowledge Source work as part of doing history
Lipson et al. (2000)	CS	Writing	Interactionist view of learning	↔	More active involvement of students Authentic and varied writing practices Writing process more flexible Acknowledgement of students' ownership Mini-lesson on writing improvement Individual conferences and peer-revision
			Behaviorist view of learning	↔	Centrality of curriculum (vs. children's needs) Pacing decided at the classroom level Focus on phases of writing process and on grammar, but few guidance about improvement Rigid period structure and high control on topic selection Short assignments
Pajares & Graham (1998)	I	Poetry	Formalism	↔	Unqualified praise of students' work Avoidance of evaluation based on criteria
Tsai, C., 2006	CS	Science	Constructivist beliefs about knowing and learning	↔	Use of lab and small group learning Challenging prior knowledge Interactive discussion and questioning Inquiry or open-ended exploration
			Positivist beliefs	↔	Lecture Lab

				Exams Tutorial problem practice
VanSledright (2002)	CS	History	Beliefs in the interpretive nature of history Beliefs in children's ability to think historically	↔ Use of disciplinary heuristics Use of multiple sources Historical investigations Focus on perspective and positionality Group work Open consideration of epistemic issues
Yeager & Davis (1996)	CS	History	History as constructed History as story to be brought to life	↔ Attention to subtext ↔ Use of documents to grab attention Use of documents to find correct information No consideration of context Reliance of the textbook for information
Zohar et al. (2001)	I	Various domains represented	Belief that learning is sequential, following a hierarchical path	↔ Higher order thinking activities are inappropriate for low-achieving students

Note. CS=Case Study; E=Experimental Study; I=Interview; S=Survey

Table 2.2

The Relation between Teachers' Pedagogical Choices and Students' Epistemic Stances: Summary of Studies

Study	Design	Domain	School Level	Teachers' Strategies	Students' Beliefs
Bain (2000)	CS	History	High school	Inquiry, with attention to the epistemic status of history	Students view history as interpretation. Yet, some develop an inquisitive attitude, others a cynical relativism
Brickhouse et al. (2002)	CS	Astronomy	College	Lecture with some small group work and extensive writing assignments	Students' views about the nature of evidence and of theories varies across contexts (biology's claims are perceived more credible than astronomy's claim because data are thought as directly accessible)
Dagher et al. (2004)	CS	Astronomy	College	Lecture with some small group work and extensive writing assignments	Students' understanding of the nature of scientific theories did not change enough to hypothesize an epistemological shift
Elby (2001)	CS	Physics	High school	Problems and class discussions fostering a reconciliation between intuitions and conceptual understanding Attention to students' beliefs Active teacher's role during class discussions Great attention to sequencing of learning experiences (from materials to assessment) Willingness to accept a reduction in coverage	Students in honor and normal classes score higher on MPEX and EBAPS (epistemological assessments measuring beliefs about the structure of knowledge, nature of learning, integration of math and concepts)
Hammer (1995)	CS	Physics	High school	Teaching strategies accommodate students' responses Inquiry based	Students' beliefs are perceived within a three levels framework: Structure of physics (pieces vs. coherence);

Jehng et al. (1993)	S	Soft vs. hard fields	Undergrad. and Grad.	Problems connected to experience Discussion of alternative answers to problems (Probable) Open ended instructional environment (seminars); exposure to ill-structured problems	Content of physics (formulas vs. concepts); Learning physics (by authority vs. independent) Students score higher on Certainty of Knowledge, Omniscient Authority, and Orderly Process scales. No significant differences on Innate Ability and Quick Learning scales (Revised Schommer's EQ)
Kuhn et al. (1997)	E	General	Middle school College	Dyadic discussions	Ability to consider alternatives increases Quality of justifications increases Awareness of one's own certainty/conflict increases
McNeal (1995)	CS	Math.	Elementary	Inquiry-based approach (mathematics as construction of relationships among real mathematical objects with solutions validated by the community of learners) vs. textbook approach (application of teacher's directed strategies together with manipulation of objects and problem-solving for understanding)	From mathematics as a sensible way of solving problems to mathematics as a set of externally decided procedures.
McRobbie & Thomas, (2001)	CS	Chemistry	High school	Student-centered learning environment; teacher as learner and modeler Laboratory fostering communal decision-making processes Activities and discussions prompting students to support reasoning with evidence	Experiments as a way to disprove students' emerging theories Some anxiety and confusion, especially at the beginning of this new approach

Mifflin et al. (1999, 2000)	PE	Medicine	Graduate	Student-centered, problem based approach Lack of sharing of learning goals with students	Strategies perceived as lack of guidance, depriving students of an apt introduction to the fundamentals of the discipline
Paulsen & Wells (1998)	S	Soft vs. hard fields	Undergrad. and Grad.	(Probable) Exposure to ill-structured problems	Students score higher on Certainty of Knowledge scale (Schommer's EQ)
Ryder et al. (1999)	CS	Science	College	Involvement in original scientific research for final year research project Lectures on history of science	Students' view of science changed differently across domains, project contexts and project focuses (experimental techniques vs. generation and support of knowledge claims)
VanSledright (2002)	CS	History	Elementary	Use of disciplinary heuristics Use of multiple sources Historical investigations Focus on perspective and positionality Group work Open consideration of epistemic issues	Students become aware of the role of historians in the generation of historical knowledge and of disciplinary heuristics. Individual differences noted among students.
Windschitl & Andre (1998)	E	Biology	College	Constructivist approach (exploratory computer-based simulations) vs. objectivist learning environment (computer-based simulation with detailed instructions)	Students scoring high on Schommer's EQ perform better than students scoring low in the constructivist environment; students scoring low on Schommer's EQ perform better than students scoring high in the scripted condition.

Note: CS=Case Study; E=Experimental Study; PE=Program Evaluation; S=Survey

Table 2.3

The Relation between Students' Epistemic Stances and Students' Outcomes: Summary of Studies

Study	Design	Domain	School Level	Students' Beliefs	Students' Outcomes
Bråten & Strømsø, 2006	E	Science	College	Naïve vs. sophisticated epistemological beliefs (Total score on Schommer 63-items questionnaire)	↔ Sophisticated beliefs are particularly facilitating comprehension of multiple texts
Davis (2003)	QE	Science	Middle school	Belief in the tentativeness of science	↔ Use of strategies for understanding (vs. memorizing)
Elby (2001)	CS	Physics	High school	Beliefs about the structure of knowledge, nature of learning, integration of math and concepts as measured by the MPEX and EBAPS	↔ High performance on conceptual tests
Hofer, B.K. (1999)	S	Math.	College	Math as Simple	↔ Lower self-regulation ↔ Higher use of elaboration strategies
				Math as an Isolated Activity (scales built with items from lists of students' typical beliefs about math)	↔ Lower intrinsic motivation ↔ Lower self-efficacy ↔ Lower self-regulation ↔ Lower course grades
Kardash & Howell (2000)	E	General (dual-positional text)	College	Speed of Learning	↔ Lower use of strategies aiming at developing awareness, building intrasentential and intersentential ties, and resolving ambiguities
				Certainty of Knowledge (scales from 42-items instrument built on SEQ)	↔ Less strategies aiming at building intersentential ties ↔ Inaccurate text processing ↔ Higher ratings of unfamiliarity with the

Kardash & Scholes (1996)	E	General (dual-pos. text)	College	Certain Knowledge (scales from 42-items instrument built on SEQ)	↔ text Less tentativeness in drawing conclusions
Lee & Ashby (2000) Lee & Shemilt (2003)	D	History	Elementary and Middle	Different conceptions of evidence and historical accounts arranged in a 6-level progression	↔ Increased ability to build historical arguments based on the sources provided Increased ability to deal with issues of bias and perspective in the sources
Paulsen & Feldman (1999a)	S	General	College	Simple Knowledge	↔ Lower intrinsic goal orientation Lower task value Lower control of learning Lower self-efficacy Higher text anxiety
				Quick Learning	↔ Lower intrinsic goal orientation Lower task value Lower control of learning
				Fixed Ability (scales from SEQ)	↔ Lower intrinsic goal orientation Lower task value Lower control of learning Lower self-efficacy
Paulsen & Feldman (1999b)	S	General	College	Simple Knowledge	↔ Higher use of rehearsal strategies Lower use of elaboration and metacognitive strategies Lower effort regulation
				Fixed Ability	↔ Lower use of rehearsal, organization, elaboration, metacognitive, peer-learning, and help-seeking strategies Lower regulation of effort, time, and

				Quick Learning (scales from SEQ)	study environment ↔ Lower use of elaboration strategies
Qian & Alvermann (1995)	E	General (physics)	High school	Innate Ability Quick Learning Certain and Simple Knowledge (scales from 53-items instrument built on SEQ)	↔ Less susceptibility to conceptual change inducted by a refutational text
Rouet et al. (1998)	D	History	Graduate students	Sources conveying content, authorship, and evidence Sources conveying only content	↔ Analysis uses multiple criteria. Sources are used to build arguments ↔ Analysis looks only at content. Conflict among sources is dismissed and trust is placed in the textbook
Schommer (1990)	S	General (psych. & science)	College	Quick Learning Certain Knowledge (scales from SEQ)	↔ Drawing of oversimplified conclusions Poorer performance on mastery test Overestimation of understanding ↔ Drawing of certain conclusion even if evidence is controversial
Schommer (1992)	S	General (statistics)	College	Simple Knowledge (scale from SEQ)	↔ Poorer comprehension Overestimation of understanding Less adaptive test preparation strategies
Schommer et al. (1993)	S	General	High school	Quick Learning (scale from SEQ)	↔ Lower GPA
Schraw et al. (1995)	E	General	College	Certainty of Knowledge Omniscient Authority Quick Learning (scales from the EBI Questionnaire)	↔ Inferior quality solutions of an ill- defined problem; no difference in syllogistic reasoning. ↔ Lower performance in syllogistic reasoning

Schreiber & Shinn (2003)	S	General	College	Fixed Ability Simple Knowledge (scales from the 63-item SEQ)	↔ Lower use of agentic, elaborative, and deep thinking processes ↔ Higher use of agentic processes
Sinatra et al. (2003)	E	General (science)	College	Seek Single Answer Don't Criticize Authority Ambiguous Information Dependence on Authority Certain Knowledge (25 items from SEQ) Openness to beliefs change Cognitive flexibility (same scales used in the Stanovich & West's study)	↔ Less acceptance of theory of human evolution, but no difference in acceptance of theory of animal evolution and photosynthesis and respiration. No difference found in knowledge about the theory of human evolution ↔ Moderately higher acceptance of theory of human evolution, but no difference in the acceptance of the other two theories
Stanovich & West (1997)	E	General (evaluation of arguments)	College	Openness to belief change Cognitive flexibility (scales vaguely resembling Schommer's Simple Knowledge and Certain Knowledge sub-scales)	↔ Evaluation of evidence independently from previous beliefs
Wineburg (1991)	CS	History	High School Professors	Text as voice Text as information	↔ Focus on subtext; reading driven by reader's questions ↔ Inability to understand subtext; inability to deal with conflict; reading driven by the text
Windschitl (1997)	E	Biology	College	Complexity of acquiring knowledge	↔ More directive role in dyadic interactions

Wood & Kardash (2002)	S	General	College	Speed of Knowledge Acquisition Characteristics of Successful students Attainability of Objective Truth Knowledge Construction and Modification (scales from 80-items instrument built on Schommer's and Jehng's questionnaires)	↔ Lower GPA ↔ Small correlation with GPA
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Note: CS=Case Study; D=Descriptive; E=Experimental Study; QE=Quasi Experimental; S=Survey

Table 2.4

The Relation between Teachers' Pedagogical Choices and Students' Outcomes: Summary of Studies

Study	Design	Domain	School Level	Teachers' Strategies	Students' Outcomes
Simpson & Rush (2003)	QE	Biology Chemistry History	College	History as interpretive activity	Increased course grade Increased transfer of strategies to other disciplines Increased regulation of learning (planning, monitoring, text-processing, rehearsing, and reviewing)
VanSledright (2002)	CS	History	Elementary	Discussion of the nature of historical knowledge, exposure to historical inquiry, and teaching of domain-specific heuristics.	Increased use of experts' heuristics Increased use of intertextual comprehension strategies Increased general motivation Individual differences noted among students.
Zohar & Dori (2003)	QE	Science	High School	Problem-based instruction Inquiry Critical assessment of newspaper clips Discussion of dilemmas Metacognitive reflection on the tasks performed Engagement with transfer activities	High and low achieving students improve number and complexity of questions posed High and low achieving students improve the quality of their argumentation (expression and justification of claims) High and low achieving students improve their general and domain specific reasoning skills (identify assumptions, avoiding tautologies, isolating variables, testing hypotheses, identifying relevant information, recognizing logical fallacies, differentiating between experimental results and conclusions.

					High and low achieving students improve in content knowledge Evidence of transfer across domains.
Zohar & Nemet (2002)	QE	Biology	High School	Examination of moral dilemmas in bioethics Explicit teaching of argumentation skills (formulation of arguments, counterarguments and their justification)	Students increase reference to evidence in their arguments Students score higher on a knowledge test

Note: QE=Quasi Experimental

CHAPTER THREE

METHODS

In this chapter, I focus on the methods of the study. I begin by describing the participants and the setting of the study, the measures used for data collection, and the theoretical justifications for these specific choices. After describing the procedures followed during the phase of data collection, I focus on the analysis of the data and especially on the development of the rubrics used for the analysis of the qualitative data.

Participants

Three high-school teachers, Ellen, Lauren, and Danielle participated in the study. In deciding to run the study in the high school, I have especially considered the possibility of observing teachers engaged in the process of fostering students' historical thinking. The literature reviewed does not suggest that historical thinking is possible only with older students. However, common practice is usually not aligned with research results and historical thinking is seldom addressed in elementary and middle schools. At the same time, the diffusion of history Advanced Placement courses in the high schools has familiarized teachers and students with document-based assessments and thus has increased the occasions to wrestle with epistemic issues. In addition, high-school teachers tend to have a higher degree of specialization in the discipline taught, thus increasing the possibility of observing a more diversified range of epistemic stances.

The teachers were known to me and I selected them after a preliminary visit to their classroom on the basis of a set of characteristics that made them promising

participants in the study. All of them worked in a school system that encourages the use of a variety of primary sources and analysis of documents in teaching history. It also encourages writing in history. These strategies have been used to foster epistemic development and the literature has reported some success (Bain, 2000; VanSledright, 2002). In addition, two of these teachers worked in the same school, but taught US History to two very different groups of students; Ellen taught a group of freshmen, who had been identified by their middle schools as challenged readers while Lauren taught a honor course to juniors. Danielle also taught honors US History to juniors, but in a different high-school.

These teachers also seemed to differ in their pedagogical practice. During my preliminary visit to their classrooms, I noticed that Ellen had developed a series of scaffolds to support her students in the analysis of sources, writing of accounts, and participation in class discussion. On the other hand, Lauren tended to infuse the historical narrative with primary sources, but at the same time seemed to focus students' attention on a few main events identified in the textbook. Finally, Danielle seemed willing to take the risk and the time to let students explore multiple perspectives and she also introduced several primary sources to enliven her historical narrative.

With the help of each teacher, one specific class was selected for the study and student participation was solicited during the first classroom visit. Only in the case of Lauren's class all students provided parental consent. In the case of Ellen's and Danielle's class only few students returned a signed consent. Among those students that provided parental consent, with the help of their teacher, I selected four

students in each class representing various levels of academic achievement and attitudes to act as student informants. Specifically, Kalyna, Jane, Eric, and Rick were freshmen and attended Ellen's class (all names are pseudonyms). Their average grade in the history class at the end of the semester was 3.25 ($SD = 0.96$). Chris, Juliet, Monica, and Kate attended Lauren's class. Their average grade at the end of the semester was 2.5 ($SD = 0.5$). Mark, Jack, Elizabeth, and Ashley attended Danielle's class. Their average final grade in the history class was 2.25 ($SD = 0.83$). With the exception of Kalyna, who was an ESL student from Eastern Europe, all the informants were Caucasians, who spoke English as their first language.

In the case of Lauren's class, I included those 27 additional students who agreed to participate and were present in class for both administrations of the BHQ (25 students) or for both administrations of the CRT (23 students). Following this criteria, only one student from Lauren's class was not included in the study, because absent on multiple days in which data were collected. This group was formed by 12 males and 15 females; their average final grade in the history class was 2.06 ($SD = 1.07$).

Measures

I have organized the measures used in the study in two main sections. The first section describes instruments used with teachers and the second one describes instruments used with students. In general, I have tried to assess epistemic beliefs and historical thinking using a plurality of measures with the intent to triangulate results and address, as best as possible, issues of validity and reliability.

Teachers

Teacher Questionnaire. The Teacher Questionnaire (see Appendix A) is an open-ended questionnaire. The purpose of this measure is to collect data about teachers' knowledge of history, their professional experience, their general educational goals, their goals in teaching history, and their level of confidence in reaching the stated goals in that particular class setting. A follow-up interview that took place at the end of the semester gave teachers the opportunity to elaborate on their answers. Informal interviews and observations throughout the duration of the study also aimed at gaining understanding of teachers' affective involvement with the students.

Evaluation of students' essays. The evaluation of students' essays (see Appendix B) has been adapted from a task used by Wilson and Wineburg to understand the knowledge of history teachers (Wineburg & Wilson, 2001). In their study, this measure proved particularly effective in eliciting teachers' pedagogical priorities and what counts as historical knowledge to teachers.

Teachers were given four essays to grade and asked to make comments on each essay that they felt might be useful to students. With the exception of Danielle, who completed part of the task while thinking aloud, teachers completed the task by themselves. I then interviewed them and asked about the criteria they used in grading the papers, the level of students' knowledge they perceived by reading the essays, eventual students' misconceptions emerged from the essays, and their pedagogical recommendations. These interviews also took place at the end of the semester.

Beliefs about History Questionnaire (BHQ). The purpose of this measure (see Appendix C) is to assess teachers' epistemic stances directly. The BHQ is a 22-items questionnaire assessing history-specific epistemic beliefs and is a refinement of a measure whose factor structure was investigated in previous studies (Maggioni, Alexander, & VanSledright, 2004; Maggioni, VanSledright, & Alexander, 2009). Respondents are asked to express their position on statements regarding the nature of history and learning history by means of a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). In constructing the questionnaire, I referred to descriptions of progression in epistemic cognition offered by King and Kitchener (2002) and Kuhn and Weinstock (2002) as hints of what kind of relations between the knower and the known may characterize different epistemic stances. Then, I referred to the characteristics of historical thinking across different levels of expertise and, in particular, to the progression in the second order knowledge concept of evidence (Lee & Shemilt, 2003) to formulate statements reflecting these different epistemic stances in the history domain.

For example, one of the characteristics of pre-reflective thinking (King and Kitchener's model), and of the realist and absolutist levels in the LEU model (Kuhn and Weinstock's model) is a view of knowledge as directly obtainable. In history, such view is very similar to the one characterizing students at the first two levels in Lee and Shemilt's (2003) progression. Failing to recognize any difference between history and the past, these students seemed to believe that history simply reflects the past.

In a previous study, Maggioni, VanSledright, and Alexander (2009) termed

the epistemic stance underlying this view as *Copier*, because the thinker operates from the idea that the past and history are copies of one another. The set of items created to exemplify views of learning history aligned with the copier stance paints an authorless view of history. Examples include, “In history there is really nothing to understand: the facts speak for themselves” and “To learn history means mainly to study many facts about the past and commit them to memory.”

Similarly, an item constructed to mirror quasi-reflective reasoning (multiplist level, in the LEU model) with its uncertainty and idiosyncrasy is: “Since there is no way to know what really happened in the past, students can believe whatever story they choose.” In history, elements of this view characterize people who realize that the past becomes visible to us mainly through the voices of witnesses and tend to conceive evidence as testimony (third and fourth levels in Lee and Shemilt’s progression). Yet, once faced by a plurality of testimonies and lacking those disciplinary tools and criteria that allow investigators to deal with issues of bias and perspective, these individuals try to discriminate between “correct” and “incorrect” residuals of the past to build a description of it. However, whenever the attempt at discrimination between “good” and “bad” witnesses fails, people adopting this stance tend to withdraw to the belief that history is fundamentally subjective and the past is made by whomever writes it.

We named the epistemic stance underlying this quasi-reflective reasoning about evidence as the *Borrower* stance (Maggioni et al., 2009). This label highlighted that individuals tend to “borrow” a history from accounts or pieces of accounts based on instinctive preferences or casual selections. Further examples of items designed to

describe a view of history in line with this borrower stance are “Good students know that history is basically a matter of opinion,” and “Historical claims cannot be justified, since they are simply a matter of interpretation.”

Reflective thinking (evaluativist level, in the LEU model) is tapped by items such as: “It is fundamental that students are taught to support their reasoning with evidence,” and “Comparing sources and looking for author subtext are essential components of the process of learning history.” We termed the stance of people agreeing with these statements as *Criteria* to highlight a view of history as a process of inquiry, in which the questions asked by investigators inform the analysis of the sources (Maggioni et al., 2009). Thus, criteria are necessary for deciding what can count as addressing the question. From the point of view of learning and history, this view favors a focus on the use of criteria historical investigators can use for formulating historical arguments based on sound evidence from the past.

In previous studies we investigated the factor structure of a similar instrument, the Beliefs about Learning and Teaching History Questionnaire (BLTHQ) and found it theoretically compatible with the epistemic stances emerging from the research of Lee and his colleagues (Maggioni, et al. 2004; Maggioni, et al., 2009). In an attempt to increase the reliability of the scales, items of the BLTHQ with low loadings on the theoretically meaningful factors were substituted with new statements, previously tested in a pilot study with college students. This questionnaire (Beliefs about History Questionnaire or BHQ) was then used as part of a battery of measures in a study with 66 elementary, middle-school, and high-school teachers participating in a professional development program.

Analyses of the data supported the theoretical compatibility of the scales derived from this questionnaire with the aforementioned theoretical framework and thus I decided to use the BHQ in the current study. In particular, from the exploratory factor analysis (Principal components, Varimax rotation) two factors emerged. Seven items describing a borrower stance and four items describing a copier stance loaded together on the first factor. Eight items describing a criterialist stance loaded on the second factor, together with three items describing a Borrower stance, loading on the same factor but with negative sign. Cronbach alphas for scales built on the basis of the factors emerged from the exploratory factor analysis were .78 for the borrower/copier scale (First Factor) and .72 for the criterialist scale (Second Factor).

I found this factor structure theoretically compatible with the progression hypothesized in the literature, since the borrower stance shares with the copier stance a lack of criteria in dealing with interpretation of conflicting accounts. On the other hand, availability of criteria to build historical arguments based on evidence characterizes the criterialist stance. Teachers completed the BHQ last, during structured interviews that took place at the end of the semester in order to limit interference with their thinking and potentially their pedagogical practice.

Constructed Response Task (CRT). The purpose of this task (see Appendix D) is to assess historical thinking in action. Similar tasks have been used in several studies targeting historical thinking and reading and writing in history. It has also allowed researchers to observe how people use evidence to construct historical arguments. The task comprises 6 documents about beliefs concerning the shape of the Earth entertained by contemporaries of Columbus. Teachers were asked to read

the documents while thinking aloud and to articulate a constructed response answering the following question: “Based on the documents provided, what was the prevalent belief about the shape of the Earth at the time of Columbus? What makes you think so? Please explain your reasoning.”

Interest Questionnaire (Teacher). This is a 13 items, 10-point Likert scale questionnaire asking teachers to indicate how often they participate in a series of history related activities (see Appendix E). Items refer to activities indicative of general interest in historical topics (e.g., watching historical documentaries) and to activities expressing participation in the professional discourse (e.g., reading scholarly history books and give talk about a history topic at public meetings). The questionnaire has been used in the evaluation of professional development programs involving K-12 teachers. Reliability of the scale measured by Cronbach alpha varied from .79 to .89 across various groups of teachers. Teachers completed this questionnaire in writing at their own convenience.

Students

Student Questionnaire. This questionnaire collects demographic data (e.g., grade, age, gender) and academic data (e.g., previous year’s GPA, final grade in English, and reading score on MSA test). It also asks students to list the history classes taken in the previous years and to rate their confidence about learning history during the semester (see Appendix F). Student informants completed this questionnaire at their own convenience, at the beginning of the semester.

Beliefs about History Questionnaire (BHQ). This is the same instrument described above in the Teachers’ section. Students were asked to complete it twice,

during structured interviews that took place toward the middle and at the end of the semester (see Appendix C), immediately after the completion of the Constructed Response Tasks.

Constructed Response Tasks (CRTs). The purpose of these tasks is to assess historical thinking in action and to monitor changes during the period of the study. In the CRT, students read a set of 6 written documents while thinking aloud with the purpose of answering a specific question (e.g., “Based on the documents provided, what was the prevalent belief about Captain Cook among the Hawaiians? What makes you think so? Please explain your reasoning.”). Two document sets, parallel in length, difficulty, and potential construction of argument, with parallel associated questions were assembled. The first, administered toward the middle of the semester, regarded the landing of Captain Cook on Hawaii (see Appendix G); the second, administered at the end of the semester, addressed ideas about the shape of the Earth during Columbus’s time and was the same that I used with teachers (see Appendix D).

Procedures

The study took place during the fall semester of the academic year 2006-2007. Before beginning any kind of data collection, I met with each teacher to explain the purpose of the study, obtain consent, and decide with them which of their classes I would be observing. During my first visit, teachers introduced me to the students and I had the opportunity to present the overall purpose of the study to them and to solicit their participation. Although class observations took place across the whole semester, I tried to observe at least a whole unit of instruction in each class. This school system

had adopted a module schedule, and classes met every other day for 90 minutes. On average, I visited each class about 20 times, observing an average of 15 full class periods for each teacher and using the remaining visits for student interviews and partial class observations. I took field notes during classes and reviewed them immediately afterwards, expanding on details that I could not write down immediately. In separate sections, I also noted my reflections on what I had just observed and their eventual relevance for the study.

The think-alouds and structured interviews with student informants took place in a quiet room made available in the schools. Teachers were interviewed in their classes at a time convenient to them. Teachers and student informants practiced the think-aloud procedure on a short article from *Muse* magazine. Once they seemed comfortable with the procedure, I told them that I was interested in understanding what went through their minds while they were reading the texts and how they built a response to the question asked by the task.

Although I encouraged these participants to read the texts aloud (and most of them actually did), I told them that they could read silently if they felt that reading aloud was hindering their comprehension. In one case (Jane), I read the documents aloud to the student who would not otherwise have been able to complete the task. If student informants remained silent for a long period of time, they were reminded to verbalize what they were thinking. Because my main interest related to students' ability to think historically, I invited students to ask me questions if they could not understand specific words in the texts, which a few of them did. Once they had finished reading the texts, if students did not address it spontaneously, I also

reminded them of the question asked by the task. Finally, I also asked students whether they had read and used the references, whether they thought that the documents agreed with each other, and how they managed eventual conflicts. Other occasional questions mainly asked students to clarify statements that seemed obscure to me. A structured interview followed, during which I asked students to express and explain their degree of agreement or disagreement with the items of the BQH. The entire session, encompassing think-aloud, oral response to and discussion of the task question, and interview, was audiotaped and later transcribed by me.

With the permission of the teachers, I collected materials distributed in class and copies of students' work relevant to the purpose of the study. The additional group of 27 students in Lauren's class completed the BQH and the CRTs in writing, the first time in October and the second time in January.

Data Analysis

Kinds of Data and Units of Analysis

Qualitative data for this study come from three main sources: interviews with student informants and teachers; field-notes taken during class observations; artifacts (e.g., worksheets; material distributed in class) collected during observations; and student written responses to the CRTs. Within each source, I defined the unit of analysis as follows:

1. Interviews: the unit of analysis is the student (or teacher) utterance spontaneously offered as a response to the texts read or associated with a prompt provided by the Constructed Response Task, by a statement in the

BHQ, or by a question asked during the teachers' interviews. An utterance corresponds to a complete sentence in the transcripts.

2. Field-notes and associated artifacts: the unit of analysis is a whole pedagogical segment, defined as a sequence of teacher and student activities addressing a specific goal (e.g., a lecture introducing a specific topic; a task assigned to students in class). I analyzed artifacts within the context in which they were collected.
3. Students' written responses to the CRTs: since I analyzed these data with the main purpose to test trends that emerged from the analysis of students' think-alouds, the unit of analysis was the whole student's response. Specifically, I looked for explicit reference to or evaluation of sources; awareness of the texts' authors; quotations from the documents (appropriate or inappropriate, in the context of the specific student's claim); citation of factual information (correct or incorrect, according to the documents provided); decision criteria (e.g., accepting the view portrayed in the majority of the documents); and unwarranted additions to what suggested by the documents.

Quantitative data come from the BHQ completed in writing by the 25 students in Lauren's class; I used them to test the following hypotheses emerged from the analyses of the qualitative data:

1. Do student responses to the BHQ suggest the same kind of "epistemic inconsistency" emerged in the interviews?
2. What kind of ideas emerged as particularly problematic?

3. What kind of change, if any, emerged from the comparison of the data obtained at the two administrations?

Analyses of Data from Think-alouds and Structured Interviews

On the basis of the literature and prior studies (Maggioni et al., 2004; Maggioni et al., 2009), I began the analysis by including categories reflective of a copier, borrower, and criterialist stance. I also looked for evidence of use of those heuristics identified in the literature as signaling historical thinking and evidence of pedagogical practices that may influence historical thinking and epistemic beliefs. In addition, I attributed specific codes to statements that explicitly mentioned the certainty or the truthfulness of knowledge, given the relevance attributed to these characteristics of knowledge in the literature.

I then began an iterative process of analysis, adding new categories to represent aspects emerging from the data that were not previously captured by the rubric, and checking the revised rubric against the data, until most of the data could be coded according to the rubric. Thus, I used both deduction and induction in the development of the rubric. Although I was open to acknowledge new aspects of epistemic and historical thinking emerging from the data, I also tried to create a parsimonious rubric, adding new categories only when a certain characteristic of epistemic thinking or historical thinking manifested itself across different participants. Finally, as a result of discussions occurred with a colleague while working at improving interrater reliability, I refined the structure of the scale and further sharpened the descriptions of the sub-categories.

The rubric. Appendix H shows the final rubric used for scoring the data.

The rubric reflects two increasingly fine grained levels of analysis. Using a coarse image, the first level identifies the first four preliminary “piles” into which I divided the data; the second level describes the main features of each “pile”. Specifically, the first level comprises four main categories: Epistemic Beliefs; Historical Thinking; Use of Reading Strategies; and Others. Epistemic cognition and historical thinking are the main constructs investigated by this study and thus my attention in analyzing the data was clearly drawn to find evidence of their manifestation. The study of reading strategies exceeds the purposes of this study; however, I decided to create a specific category to code them due to the great number of utterances signaling these behaviors, especially during the completion of the CRTs. I also decided to create an overarching category grouping constructs less central, although still pertinent, to the study, to be able to calculate meaningful reliability indexes for the various levels of analysis.

The finer grain level of analysis identifies the characteristics of epistemic beliefs and historical thinking emerged from the iterative process described in the prior section and specifies the other constructs used to analyze the data. Specifically, sub-categories 1-6 regard characteristics of epistemic beliefs; sub-categories 7-11 regard statements dealing with historical thinking; sub-categories 12-17 specify the other constructs used for analyzing the data. In particular, sub-category 12 comprises strategies employed while responding to the task that are not typical of thinking historically, although they may sometimes be helpful (e.g., local and global restating; interpreting; elaborating; re-reading; asking meaning of words), sub-category 13

groups statements dealing with teacher and student motivation; sub-category 14 gathers statements and actions regarding pedagogical practices potentially influencing epistemic ideas or historical thinking; sub-category 15 groups statements mentioning the idea of truth in relation to knowledge; sub-category 16 regards statements referring to the idea of certainty of knowledge; and, finally, sub-category 17 groups those statements that I was unable to interpret clearly because participants said too little to allow a sufficiently unambiguous interpretation of what they meant or were just a repetition of the prompt.

Description of the categories. In this section, I focus on the first 11 categories and expand on their description given that they represent the central constructs of the study. I also indicate in what way those categories reflect constructs already used in the literature and to what extent they introduce new facets of epistemic beliefs and historical thinking. I concentrate on the Epistemic Beliefs sub-categories, first.

Epistemic beliefs sub-categories (1-6). On the basis of prior studies (Maggioni et al., 2004, Maggioni et al., 2009), I began the analysis using three sub-categories (Copier, Borrower, and Criterialist) that were overall compatible with Kuhn's and King and Kitchener's model of epistemic development (King & Kitchener, 2002; Kuhn & Weinstock, 2002) and with the developmental trajectory of the concepts of evidence and historical accounts as described in the work of Lee and his colleagues (Lee, 2004; Lee & Ashby, 2000; Lee & Shemilt, 2003). In particular, following Kuhn and Weinstock (2002), I found it particularly useful to characterize different epistemic beliefs along a continuum representing different combinations of

the subjective and objective dimensions of knowing. The descriptions that follow are ordered with reference to this characterization.

On one end of the objective-subjective continuum, the first sub-category EBCO (*Copier*) describes a view of knowing in which there is no overall awareness of the role of the knower and evidence is therefore conceived as detached from argument. Two main ideas consistently tended to characterize this stance across the data; the first one can be described as the belief that history coincides with the past and it is thus constrained by the availability of its remnants (e.g., documents, artifacts, and bones). Examples of this way of thinking were offered by utterances in which the words “history” and “past” were used as synonyms. The second idea regards the role of historians, conceived as chroniclers or serendipitous finders of remnants of the past. At best, historians are entrusted with the task of discriminating between true and false artifacts or witnesses, but the weight of generating knowledge remains heavily dependent upon its object. Similar ideas were also reported by Lee (2004), who found that some students tended to explain differences among historical accounts as a result of the impossibility of “being there” (in the past) or as a consequence of accessing different remnants of the past. Again, similarly to what I found in this study, some students were seeing evidence as granting immediate access to the past and blamed eventual problems on the incorrectness of the “information” (Lee & Shemilt, 2003).

On the opposite side of the objective-subjective continuum lies the third sub-category, EBSUB (*Subjectivist*). In this case, the role of the knower in the process of knowing is perceived as predominant and for the most part unbound by any reference

to something existing outside of the knower. Participants reflecting this stance often voiced the idea that history depends on the views of those who write it and thus it becomes a matter of opinion. Whenever objective remnants of the past were mentioned, participants discounted them, on the ground that their use became a matter of choice and interpretation was therefore at the mercy of the historian's personal opinions. Also in this case, the findings of this study echoed what reported in Lee's work (2004), where some students explained differences in accounts as an "author problem," due to mistakes or differences in points of view. In this study, statements reflecting these beliefs generally underscored issues of personal opinions and/or bias and rarely mentioned the difficulty in discriminating among different testimonies that we had hypothesized was at the root of this stance. Thus, I decided to name this category *Subjectivist* and drop the term Borrower that we had created to interpret the factors emerging from the administration of a questionnaire similar to the BHQ to teachers (Maggioni et al., 2004, Maggioni et al., 2009).

The remaining sub-categories describe increasingly successful attempts to integrate the role of the object and of the subject in the generation of knowledge. In the rubric, I named two of these stances as transitional, because individuals seemed to oscillate between the arguments and ideas characterizing the two extremes of the continuum (within the same utterance), while remaining unable to produce a coordinated synthesis.

I consider sub-category 2, TR1 (*Transition 1*), first. Participants expressing this epistemic stance voiced the desirability of a coincidence of history with the past. In other words, historians were viewed as "wannabe" chroniclers, thus sharing much

of the copier stance. However, these individuals were also aware that complete knowledge of the past is always, or at least very often, impossible because the interpretation of what we have left from the past is debatable or because we are simply left with too little. In all these cases, these participants saw history as a hopelessly subjective endeavor and it became just a matter of opinion, echoing several of the ideas characterizing a subjectivist stance. However, contrary to a purely subjectivist stance, they did not believe that this was a universal condition for historical knowledge and, in general, regretted these occurrences. In particular, they tended to cast the difference between possible and impossible (or subjective) history as a dichotomy between objective facts and opinions that cannot be challenged. In a few cases, however, participants indicated that out of a multiplicity of opinions (and sometimes because of it) the truth about the past could be reached (or, at least, one could make up one's mind).

Sub-category 4 (TR2, *Transition 2*) signals clear movement toward coordination between object and subject of knowledge and is expressed by statements that acknowledge that history is the interpretive work of the historian based on the evidence. However, these statements also suggest lack of clarity about the method that may make such coordination possible.

The final developmental step envisioned in Kuhn's and King and Kitchener's models involves the coordination of the objective and subjective aspects of knowing, a stance represented in the sub-category 5 of the rubric and coded as EBCR (*Criterionalist*). Individuals sharing this stance would recognize the interpretive role of the historian in choosing and evaluating the remnants of the past. In Lee's terms

(2004), they would acknowledge that differences among accounts depend on the very nature of historical accounts. However, they would also acknowledge that such interpretive work relies on specific disciplinary criteria and heuristics that characterize the historical method. For example, this method allows the historian to transform the remnants of the past into evidence, by asking to the sources questions that they were not necessarily designed to answer and by placing them in their historical context. I also created sub-category 6 to group statements expressing epistemic ideas that did not fit the previous categorizations.

Historical thinking sub-categories (7-11). Sub-categories 7-11 regard various aspects of historical thinking. I began the analysis by looking at statements signaling the use of heuristics that the literature suggested typical of historical thinking (Lee & Ashby, 2000; VanSledright, 2002; Wineburg, 2001a). Within this broad category, I found utterances suggesting the use of heuristics clearly signaling historical thinking and utterances suggesting the use of heuristics clearly incompatible with thinking historically. Three additional sub-categories were created to describe other kind of processes that participants used, especially while completing the CRT. In the end, five sub-categories seemed to capture the aspects of historical thinking emerging from the data.

Sub-category 7 (HTYes, *Historical Thinking Yes*) comprises those utterances signaling that participants were using heuristics (e.g., sourcing, corroboration, and contextualization) characterizing historical thinking. I coded in the same way utterances signaling that participants were knowledgeable about these heuristics.

Sub-category 8 (HTNo, *Historical Thinking No*) included evidence of use or evidence

of knowledge of heuristics clearly incompatible with historical thinking. In order to be coded as HTNo, a statement or a process should consist in a positive affirmation of some declarative knowledge (e.g., the historical method is not necessary since one can know history well even without it) or in a strategy actually employed by the participants during the performance on the CRT (skipping the citations of the documents in the CRT because they could not provide information useful for the task at hand) that hinder the possibility of thinking historically. In other words, I did not code as HTNo the mere lack of use of heuristics that would be deemed appropriate in order to think historically (sourcing), but the deliberate use of a strategy (skipping) that prevents historical thinking.

Sub-category 9 (CP, *Cut and Paste*) regards those statements and processes that signal an approach already identified by Lee and Shemilt (2003) in regards to ideas about evidence and defined in that context as “scissor and paste”. Several participants handled the CRT by selecting parts from different documents in order to build a more or less coherent story. Their approach was “additive” and “selective,” in the sense that they did not do any kind of intertextual comparison; on the contrary, they dismissed potential conflicting evidence. While this approach clearly lacks fundamental features of historical thinking, it does not directly oppose it (like HTNo) and hence may require a different pedagogical intervention. For this reason, I decided to identify these instances with a specific category.

The awareness that historians do not mirror the past but investigate it in regard to specific questions is an important step in thinking historically (Lee & Ashby, 2000; Wineburg, 2001b). Sub-category 10 (AQ, *Awareness of the Question*) gathers

evidence of participants' awareness of the question they were trying to answer while completing the CRT. Similarly, the awareness that a text has an author and is not a mere conveyor of information is an important step in understanding the nature of historical accounts and has been found to influence text comprehension (Paxton, 2002). Sub-category 11 (AA, *Awareness of the author*) gathers evidence of such awareness.

Reliability. Once the rubric was defined, I recoded all the data. Given the number of subcategories, I coded one category (e.g., Historical Thinking, Epistemic Beliefs) at a time. Another researcher, familiar with the overall purpose of the study but who had not participated to the development of the rubric, was explained the rubric and asked to score part of the data independently. Specifically, I chose three students who, in my view, manifested a broad range of epistemic beliefs and different levels of historical thinking. After training, the inter-rater agreement on the four main categories assessed using the Cohen's Kappa index was .92. The inter-rater agreement on the five Epistemic Beliefs sub-categories and on the five Historical Thinking sub-categories was also assessed; the Cohen's Kappa indexes were .90 and .92, respectively. Most disagreements regarded instances in which only my colleague or I attributed a code to a specific utterance. Very rarely, we attributed different codes to the same utterance. Specifically, this happened only in 3% of the coding for the Epistemic Beliefs sub-categories. In all these cases, after reflection, I decided about the final coding.

Analysis of Field Notes and Artifacts

In analyzing the field notes, I first built short summaries of each lesson, identifying its main purposes and listing the methods, pedagogical moves, and the tasks used by the teacher to achieve them. In this way, it became easier to identify patterns in the lesson structure and the prevalent pedagogical approaches and moves used by each teacher. The review of class assignments and other artifacts (e.g., additional readings; worksheets) helped me to better understand the overall contexts of classroom exchanges and provided additional material to identify recurrent pedagogical practices.

Analysis of Students' Written Responses to the CRTs

In analyzing students' written responses to the CRTs, I referred to the aspects of historical thinking identified in the rubric (sub-categories 7-11), while remaining open to the emergence of new facets. Specifically, the following categories seemed to capture well the aspects of historical thinking (or lack thereof) emerging from students' written responses: a) explicit reference to a specific document; b) direct quotations from the documents (appropriate or inappropriate, in the context of the specific student's claim); c) justification of response (e.g., accepting the view portrayed in the majority of the documents); d) citation of factual information (correct or incorrect), taken at face value from two or more documents (i.e., Cut and Paste); e) citation of factual information (correct or incorrect), taken at face value from one document; f) unwarranted additions to what suggested by the documents.

Analysis of Students' Written Responses to the BHQ

I analyzed the written responses to the BHQ adapting a method used in a previous study to analyze data obtained from college students responding in writing to the BHQ (Maggioni, VanSledright, & Reddy, 2009). In that study, Maggioni and colleagues found that results obtained by using this method of analysis were compatible with results derived from qualitative analysis of students' justifications of answers provided to the written BHQ. These justifications were offered in writing or during interviews.

Since items in the BHQ were written to reflect copier (items 5, 9, 16, 19, and 20), subjectivist (items 2, 4, 6, 8, 10, 12, 14, 17, and 22), and criterialist (items 1, 3, 7, 11, 13, 15, 18, and 21) stances, a consistent epistemic position should produce agreement with items mirroring that specific stance and disagreement with items indicative of the other two stances. The first step in the analysis involved attributing values to the 6 levels of the Likert scale. Although I did not intend to assume continuity of the scale, relative numbers seemed particularly apt for the purposes of this analysis, because their sign could represent the position toward the statement (agreement or disagreement) and their value could represent the strength of the decision (strongly or somewhat). In this way, I sought to maintain the order captured by the Likert scale, while creating a useful tool for the analyses described in the rest of this section.

First, I scored students' responses using the following equivalencies: strongly agree = +3; agree = +2; somewhat agree = +1; somewhat disagree = -1; disagree = -2; strongly disagree = -3. Then, I assessed each student overall position toward a certain

stance by calculating weighted average scores; I did so by summing the scores obtained on the items reflecting that particular stance and dividing the result for the number of items mirroring that particular stance. For example, a student who agreed with item 5 and 9, somewhat disagreed with item 16 and disagree with item 19, and strongly agreed with item 20 (all items reflecting a copier stance) would receive a score of $[(+3)+(+2)+(-1)+(-2)+(+3)]/5 = +1$. I interpreted the sign of the score (+) as an indication that the student's degree of agreement with the copier stance tended to be stronger than his degree of disagreement. I interpreted the value of the score (1, in the example) as an indication that such agreement was overall moderate. As such, I used it as a provisional suggestion of the compatibility (or not) of the student's beliefs with one of the theoretically derived epistemic stances.

Yet, this score does not indicate the consistency of the student's stance. In fact, another student might obtain the same score (+1) by somewhat agreeing with all the items reflecting the copier stance and thus suggesting a more consistent copier stance. I decided to assess students' epistemic consistency in relation to the criterialist stance. Two reasons motivated this choice. First, most students tended to agree with items mirroring this stance, thus suggesting a relative preference for it (yet, how consistent was this preference?). Second, beliefs characterizing the criterialist stance are theoretically preferable because they are more reflective of the nature of historical knowledge and generally preferred by experts (Maggioni et al., 2004). Thus, I was particularly interested in assessing change along this dimension.

Perfect consistency with the criterialist stance would be indicated by responses stating agreement (+1, +2, or +3 scores) on all criterialist items and

disagreement (-1, -2, or -3 scores) on all copier and subjectivist items. To express the degree of consistency, I created a ratio (expressed in percentage) between the number of such responses and the total number of responses (22, if a student responded to all the items of the questionnaire). I called this ratio *consistency score*. For example, a student agreeing with all the copier items (total = 5), disagreeing with all the subjectivist items (total = 9) and agreeing with all the criterialist items (total = 8) would obtain a consistency score of 77%, i.e., $[(8 + 9 - 5)/22]*100$.

Finally, I calculated the median scores of each item of the BHQ and inspected the frequencies of their scores. In this way, I identified those statements reflecting a copier and subjectivist stance that students tended to find particularly appealing and those statements indicative of a constructivist stance with which they tended to disagree.

CHAPTER FOUR

RESULTS

In choosing how to organize the reporting of the results of the study, I was faced with several options, and I was aware that each choice would have brought certain aspects of the study to the forefront leaving others in the background. In particular, I could have looked at the data as evidence of the influence that the pedagogical practices and moves of participant teachers had on students' epistemic beliefs and epistemic cognition. Hence, I could have organized the results according to the time sequence in which I collected the data. I have to admit that this was the kind of story that I thought I would write as a result of the study.

However, the more I analyzed the data, the more I became convinced that the main contribution of the study to current theory and pedagogical practice lies in the descriptive richness of epistemic cognition it affords. In particular, I believe that it contributes to unveil some key features of teachers' and adolescents' domain-specific epistemic beliefs and historical thinking that can be particularly useful to those educators who strive to promote epistemic development in their students. These students may be adolescents enrolled in high-school history courses or practicing teachers involved in professional development. Be as it may, being aware of where they can be met on their developmental path and what stumbling blocks they are likely to encounter can greatly facilitate the task of accompanying them along the way.

In line with the theoretical model, I focus on teachers first, considering their goals, their pedagogical practice, their epistemic beliefs and the features of their historical thinking. By triangulating data from different sources (e.g., class observations, structured and semi-structured interviews, and tasks performances) and testing whether features emerging from one set of data are consistent (or at least compatible) with behaviors and ideas emerging from a different set of data, I aim to enrich and keep in check the perspective I necessarily brought to my observations with the teachers' own voices. For this reason, I do not aggregate results across teachers, although I will summarize the similarities and differences especially salient for the purpose of this study in a specific section following the portraits of these three professionals.

Then, I focus on student epistemic beliefs and historical thinking, identifying the facets of these constructs that emerged from the data as particularly significant. In this way, I can profit of student pre- and post-data to offer a description of their thinking as nuanced as possible; considering the moderate changes observed between the two data collection points, this approach offers the additional advantage of avoiding useless repetitions. However, I will highlight all observed changes in student beliefs and epistemic cognition in a specific section.

I leave the consideration of the evidence suggesting how teachers may have contributed to the epistemic development (or lack thereof) of their students to the discussion section, given the higher degree of inference implied by this level of analysis. I believe that this organization of the results is overall consistent with the

research questions and with the core theoretical model derived from the literature, and I hope that it may foster the readability of the manuscript.

The Teachers

I organize the results regarding each teacher in four main sections. In the first one, I describe teachers' goals, teachers' interest, and teachers' rationalizations of their pedagogical practices, as they emerged from teachers' interviews, written responses to the teachers' questionnaires, and evaluation of student essays. In the second, I summarize teachers' pedagogical practices that I observed during my visits to the three classes involved in the project. In so doing, I rely on my fieldnotes, which I took while classes were in session and immediately afterwards, as an integration of or a reflection on what I had been observing. I also rely on material distributed in class (notes, worksheets, tests, and textbooks) that teachers generously shared with me.

For each teacher, the results from observations reported in the second section comprise a description of features characterizing each teacher's general pedagogical approach (e.g., relations with students and classroom climate) and then focus on those practices that may have had a more direct relation with student development of historical thinking and epistemic beliefs. Although the specific question of this research project regards the emergence and development of epistemic cognition in history and of potential factors influencing them in the classroom, I believe that a description of these teachers' overall pedagogical approach is important for at least two reasons. First, some understanding of the complexity in which teachers operate is necessary to contextualize the results of this study and to appreciate how these

professionals faced the competing demands of their individual students and of the school system. Second, I hope that relating the similarities and differences across these three teachers with findings about their students may provide an initial understanding of what broader factors may (or may not) be particularly influential in the development (or lack thereof) of historical thinking and epistemic beliefs.

For example, at the time of the study, the schools in this particular school system followed a block structure, which meant that classes met every other day for 90 minutes. Ellen was teaching the first block and had to recur to many small stratagems to keep some of the students awake. On the other hand, Lauren's class met during the last block of the day. By that time, it was very difficult to keep students' engaged for the whole period and, on top of that, Lauren had occasionally to take care of various situations that had developed during the day with students in other classes. In addition, all teachers had several administrative tasks to fulfill (e.g., enter attendances on the computer as soon as possible) plus attending to various kinds of emergencies involving single students or deadlines affecting the schools as a whole.

The pressure posed by school-system pacing guides and testing was also lamented by all the teachers and its influence on teachers' pedagogical choices seemed to become stronger toward the end of the semester, when teachers struggled to "cover" all the topics included in the pacing guide ("We have 30 years of history to cover; five classes. Two days of review." Ellen). Writing in social studies classes was also encouraged in this school system; all written assignments were graded and contributed a large portion of student final grades. For teachers (especially for the

junior classes), it meant long hours of grading work and the implementation of a system of collection, scoring, recording, and distribution of assignments, which, although efficient, required its share of attention from teachers' and students' alike.

Can some of the teachers' choices in terms of pedagogical practice be explained by these particular circumstances? Class observations and the teachers' rationalization of their practice suggest that these factors have certainly played a role. On the other hand, are they enough to explain why teachers focused (or not) on the development of historical thinking in their students and how they did it? The third and fourth sections explore some concurrent explanations for their choices. Specifically, the third section reports results from structured interviews with teachers about their epistemic beliefs (responses to the BHQ), supplemented by their responses to some Grand Tour questions such as "What is history for you?" that opened the teachers' interviews. The fourth section describes their performance on the CRT task. Finally, a section summarizing the main similarities and differences across these three teachers follows their individual portraits.

Ellen (Class 1)

Goals.

Making it real. History had a strong personal significance for Ellen. Specifically, it played a central role in determining one's identity: "[I]t's like the code that I have in my wallet, where you have been, where you are, and where you are going." When asked to rank in order of importance her major goals in teaching history, Ellen offered the following list: a) making lessons meaningful; b) making connections between students and the past; c) making history relevant; d) helping

students understand the topics and how they connect to present day; e) transforming the kids into historians. These goals had precise pedagogical implications for Ellen.

[Y]ou have to make it real to the kids, and you have to make it applicable, otherwise it is just pages in a textbook, and you have to make that come to life. It is an ongoing story that changes every day, every month, every year, so that is what history is, finding out where you have been and how that makes what you are today, whether it be at the personal level, or at the level of the nation, or at the global theater aspect.

In this context, the introduction of primary sources in the curriculum served for Ellen the purpose “to get them thinking about it, to get them to see: OK, it really is real people, she is not making it up, it’s not a story, this is someone who really lived this.” Lurking behind this goal was the idea that history and the past should coincide, as hinted in this quote.

I think it gives a whole new meaning to history when they are actually holding it in their hands, even if it is a replica [...] [B]ecause you can speak all you want, but it’s not going to mean anything till they don’t actually see it. [...] [P]rimary sources make history real, [they] provide that connection, most like a doorway.

While the importance of making history personally relevant for her students cannot be easily dismissed, this use of primary sources, from the epistemological point of view, raises a few questions. Specifically, by fostering the idea that sources can grant a direct access to the past, how will students perceive the role played by the author (in the past) of the source in its production? Perhaps more importantly, what

role will they envision for themselves (in the present) in the process of knowing about the past? The answers to these questions may have important implications for student ability to think historically, another of Ellen's stated goals.

Ellen seemed to be aware of this connection and, in revisiting her goals during the interview, she explained that "transforming kids into historians" did not mean that they "have to be research historians," but rather it meant that they needed to develop "higher order thinking," be able to think about why something happened, get a deeper understanding of the complexity of the past, and "then make up [their] own opinion about what side of history." It was precisely at this level that Ellen experienced her gravest frustration, especially with the low level reading class she was teaching. Her disappointment was made worse by the fact that she was successful in reaching her goals with prior classes having the same reading problems.

This year has been more of a struggle, with some of the kids, whether just not getting it, or not participating enough, or not doing enough. Do I think they were getting it? Sometimes I feel it's like beating a dead horse and going on, and on, and on. [...] I hate to say it, but it's like higher order thinking is disappearing. [...] I am noticing in those kids who are struggling readers, higher order thinking is not a priority, and that frightens me, because it is not so much being taught to think why this happened. They are taught to think about who, and what, and when, and where, and that's it, and not the why's, that has been left out so that they can get through.

Getting it. Ellen often underscored the centrality of students and was willing to challenge extant pacing guides and curricula if they did not serve her students well.

When asked what she meant by students “getting” history, she mainly referred to their ability of “making the connections” and “understanding what I am saying.” As examples, she cited the role of nationalism and of international alliances during WWI, and the harsh conditions of the Treaty of Versailles as facilitating factors for Hitler’s rise to power. Although Ellen stressed the importance of understanding connections, the focus remained on substantive knowledge. The origins of and warrants for the preferred narrative were not shared with the students.

Writing in history. Ellen’s optimal essay would include a strong thesis statement clearly addressing the question proposed. The process of selection of evidence played a key role in essay writing, so much so Ellen often forced the students to “take a side,” aiming in this way to foster their ability to construct arguments grounded in evidence and to explore the “facts” provided by different perspectives. Ellen was willing to let students argue for a middle ground providing that students justified their choice by presenting “arguments from both sides.”

Ellen also appreciated essays that had a clear, precise focus (e.g., only on WWII, specific technologies). Overall, she would have pushed students to take more risks in the construction of their thesis statements and engage themselves deeply with it, avoiding as much as possible to mimic a “textbook read.” She would also expect use of appropriate vocabulary, overall factual accuracy (e.g., “[...] if they say Tokyo instead of Hiroshima or Nagasaki is better than saying that we blew up Paris”), some contextualization (e.g., “[...] that they know in what theater it happened”), and understanding of the relevance of specific events (e.g., “[...] what point the Americans had to be in to just want to end it like that”).

Interest. In responding to the Interest Questionnaire, Ellen reported a very high degree of involvement in several of the activities listed. With the exception of giving a talk about a history topic at a public meeting, she stated that she participated often in most of the activities included in the questionnaire. Her total score on the questionnaire was 93 (max. score 117). Her degree of engagement in the various activities suggests that she was interested in the popular aspects of historical knowledge, while considering history a domain of professional interest, as well. In fact, she noted a particularly frequent participation in the following activities: search for primary source material, engage in historical inquiry, watch historical documentaries and popular movies on a historical topic, and read scholarly history books and historical novels.

Pedagogical practices.

General traits. Since my very first visit to her classroom, Ellen struck me for the kind of relationships she strove to build with each student. Authoritative and friendly at the same time, she encouraged and pushed them to give their best. For this purpose, she resorted to several strategies. For example, when student participation was low, Ellen often played the role of the one in need of attention: “Wake up, guys! You are with *me*. It’s all about me. I am the princess.” With this approach, she reminded them, jokingly but firmly, about her expectations (e.g., turning in their papers, putting books away, or paying attention). Ellen was also very willing to take all the time that was necessary to address individual questions (especially when posed by students who did not usually participate much in the class’s conversation) and also to compliment some special outfits worn by students. The effect on the overall

classroom climate was positive, fostering open and respectful relationships, and provided a space in which students were willing to comply with Ellen's directions even when they would have rather done otherwise. One of her quote of the week by G. K. Chesterton illustrated the ideal relationships she encouraged in her classroom: "There is a great man who makes every man feel small. But the real great man is the man who makes every man feel great."

Students sat in pods, and Ellen encouraged a similar style of relationship also among her students; yet, during the course of the semester, Ellen was often frustrated by the lack of her students' response. They liked her, respected her, and, for the most part, they respected each other but, for many of them, the positive character of their relationship was insufficient to boost their motivation for learning.

Ellen freely shared with her students her passions and her values, and she encouraged them to participate in social projects, such as a food drive to provide Thanksgiving meals for poor people living in the area. She especially highlighted the connection between this activity and social studies, "because it [social studies] is around us." Although respectful and appreciative of the diverse traditions that her students brought to class, Ellen had no trouble in sharing her Catholic upbringing and her Native American roots. A few students responded by doing likewise, whenever the conversation made it appropriate. Similarly, she did not hide her point of view on some of the topics studied during the semester (e.g., Indian Removal, appropriateness of government intervention to protect women and children labor). On the contrary, the very way in which she read and commented upon the texts, her use of irony and of rhetorical questions demonstrated the role that perspective plays in history, besides

underscoring the personal relevance that history had for Ellen. Given its relevance for the development of historical thinking, I will return to the issue of perspective in the subsection describing the use of primary sources in Ellen's class.

Consistently with her goals, Ellen's questioning often aimed at activating connections (with student current experiences or prior knowledge) and at drawing logical inferences. For example, at the beginning of the semester, Ellen used post-it notes to have students acknowledge and later share something they already knew, something they learned, and something they found striking in the assigned readings. Another quote by Henry James displayed on Ellen's classroom wall described well this concern for personally meaningful, connected learning: "Nothing in education is so astonishing as the amount of ignorance it accumulates in the form of inert facts." Although Ellen was teaching students identified as "low level readers," she liked to qualify that this label did not imply that they were "low level students." In particular, she did not think that the difficulties they faced in reading would necessarily prevent her from fostering historical thinking. However, as Ellen explained during her interview, historical thinking was often used in her class as a synonym for those "higher order thinking" skills she strove hard to foster in her students. In the next sections, I describe a few characteristics of Ellen's pedagogical practice that may have influenced more directly the development of epistemic beliefs and historical thinking in her students, as they emerged during the observations that I conducted in her class.

Thoughtful recitation. Ellen used a variety of techniques during her lessons, including individual and group work, video clips, and web quests. However, most of

her exchanges with students took the form of a thoughtful recitation, with Ellen probing students' understanding of topics previously discussed in class or asking questions aiming at clarifying the meaning of key words. The following excerpt is an example of this kind of dialogue:

Ellen: *We are now talking about treatment of Native Americans from the United States. The US takes away the land.*

Student: *Made them move.*

Ellen: *Pushed them back. What is the name of the place?*

Student: *Reservation*

Ellen: *What about schools?*

Student: *They kidnapped them.*

Ellen: *Not really, what did they want?*

Student: *Be like White people*

Ellen: *Big word: assimilate. What does it mean? She [in the video clip] just told us.*

Student: *Become like the Whites.*

Ellen: *How were the Native Americans described?*

Student: *Savages.*

Ellen: *Do you think they had no culture?*

Student: *No*

In other cases, Ellen used these rapid exchanges with students to foster inferences and to push students to clarify their statements. For example, during the lesson on the roots of Imperialism, she asked students about the characteristics of an

industrial nation. Students mentioned factories, cities, and power. At this point, Ellen asked what the student meant by power.

Student: *Do whatever they want. It's hard to explain.*

Ellen: *Explain more, do what?*

Student: *Hurt other countries, take them over.*

Ellen: *Why may they want that?*

Student: *To control them.*

Ellen used this kind of recitation especially when she was introducing students to new topics. At the same time, students were usually provided with some form of graphic organizer that Ellen filled on the overhead projector and students copied. Very rarely, during this kind of exchanges, students (or Ellen) explicitly referred to sources; Ellen seemed more focused on presenting a well organized narrative that was meaningful and that “made sense,” highlighting connections with prior topics and with students’ current experiences. Ellen used this venue also to foster understanding of first order concepts (e.g., assimilation, ration, resources) and to elicit student empathy for people who had lived in the past, especially if marginalized by their contemporaries.

Tasks. Besides being involved as a whole class in the kind of recitation described in the prior section, students spent a considerable amount of class time working individually or in small groups on a number of tasks. What were the students mainly doing while completing these tasks? Most of the topics addressed in the course were introduced, explored, and revisited by using different kinds of tasks, often following a sequence that comprised the exposure to new information (through

lecture, recitation, reading of textbooks, and video-clips), the repetition and organization of that information, and the use of that information to construct a personal understanding of the issue examined. Thus, most of the activities that I observed can be grouped into three main categories: organization of information from texts or other sources; construction of narratives; and analysis of primary sources. The rest of this section describes the main characteristics of each of these activities and provides a few examples taken from my class observations and from the analyses of materials distributed in class.

I have previously described the kind of “thoughtful recitation,” used by Ellen. When information was presented through this venue, the main goal seemed to help students to internalize it in an organized fashion. Ellen provided concept maps (containing drawings, boxes with titles, and links among boxes) and students filled them in by copying what she was writing on the overhead. In some cases, some partially pre-completed Cornell notes were also used. In all these cases, the nature of what was conveyed was not discussed. Factual information such as events, people, or places and interpretive tools such as first-order concepts (e.g., assimilation) or causal relations were all presented as content to be learned and placed beyond interpretation.

A diverse set of tasks was devoted to promote students’ repetition and organization of information conveyed by texts. In this case, students were asked to summarize key points of the readings (or of the notes taken in class), sometimes in their own words, but, more often, by filling in blanks. An example of this fill-in-the-blank approach is the following:

15th Amendment:

a) proposed by _____

b) no one may be kept from voting because of “race, color, or previous condition of servitude

c) ratified in _____

A broader question usually followed a set of these review statements, such as “List five problems facing the South after the Civil War. Describe the solution that was attempted for each problem.” In other cases, students were provided with graphic organizers to identify key ideas or events and then focus on similarities and differences (e.g., identify the ideas in Lincoln’s and Johnson’s plan for reconstruction and explain how they differ).

In a few cases, some “question to ponder” was interspersed among a series of “fill-in-the-blank” statements (e.g., “If you are free and cannot vote, are you really free?” or “What does freedom mean to you?”). However, the space provided in the worksheet for students’ answers was quite small and could contain no more than two or three lines of handwriting. Similarly, the space provided for answering questions in students’ own words was also limited (one or two very crowded lines), suggesting that the expectations for student elaboration of the “information” was minimal, whether the question could be answered by just one word (e.g., “What was the nickname given to the laws that promoted segregation of the races?”) or whether it might prompt a more elaborate response (e.g., “Describe the economy of the South during Reconstruction”).

The main features of this kind of questioning did not change when students, instead of using printed texts, used the computer lab for a Web Quest on the Age of Imperialism. Also in this case, the questions closely followed the structure of each text contained on the website, rarely requiring students to build meaning out of multiple paragraphs. In addition, students tended to skip those questions that did require a broad understanding of a whole section.

Another kind of task required students to evaluate the relevance of a set of events or the facets of a certain issue, by building “stories” that brought some factors to the forefront while leaving others in the background. This kind of task implied a more active student role in the construction of knowledge. For example, at the very beginning of the semester, students worked in groups to construct a dodecagon [i.e., a tridimensional solid with 12 faces, made out of light cardboard] illustrating their story of Reconstruction. They were asked to use mostly pictures and very few words. In explaining the task, Ellen told the students that she viewed this activity as an opportunity for demonstrating the knowledge that they had been able to build about Reconstruction and not simply a regurgitation of what she had previously explained to them. She also told students that she would grade the outcome of this task as a test, although another more traditional test on the Reconstruction would follow, too.

Other examples of this kind of activities included drawing a story board about pioneers’ life, creating a pamphlet to bring awareness to the problems faced by child laborers or adult workers, writing a journal entry about one day in the life of a businessman or an employee during the Gilded Age, writing a newspaper article addressing one event that dealt with the ascent of the United States to a world power

status, and creating a political cartoon expressing students' views on imperialism. Ellen often encouraged students to take a stance, often repeating that "there was no right or wrong answer," providing that students backed up their responses with evidence. However, the epistemic connection between the kind of narratives (or "stories") generated by the students and the nature of historical knowledge was not openly discussed, nor were the source and the reliability of the "evidence" (i.e., information extracted mainly from various texts) evaluated. A good deal of emphasis was placed on building responses consistent with the historical context (as conveyed by the readings and the work done in class) and students often demonstrated the capacity to build narratives consistent with it. They were also able to scavenge the texts for finding the pieces of evidence necessary to complete the task at hand. However, this kind of thinking had little resemblance with the weighting of evidence necessary for thinking historically.

Use of historical sources. Although the textbook remained the main source of ideas and provided the broad narrative structure of the course, Ellen shared a few primary and several secondary sources with the students. In the case of primary sources, Ellen used them mostly to better illustrate some aspects of the topics comprised in the curriculum and to elicit empathy. For example, while reviewing the Reconstruction, she gave to the students a copy of the literacy test that was required for voting. Ellen also used primary sources to convey the perspectives of groups usually marginalized from the main narrative and to provide different point of views on controversial issues (e.g., forced education of Native Americans).

Several of the secondary sources used a narrative style (e.g., Hakim's "A History of Us"; newspaper articles) or consisted of summaries of the textbook's chapters. Students tended to prefer these texts to their textbook, which most of them found too long and too difficult to read. Despite these students had been identified as challenged readers, they were assigned the same textbook (*The Americans: Reconstruction to the 21st Century*, published by McDougal Littell) in use in the two Honors classes that also participated in the study. Thus, Ellen used various alternative texts to support and foster the reading abilities of her students and to teach different reading strategies (e.g., previewing, skimming, understanding words in context, use text aids such as glossaries and pictures, and identify main ideas).

On a couple of occasions, Ellen discussed with students whether certain sources could be considered primary or secondary (e.g., autobiography versus biography; quotes included in a textbook). However, implications for this categorization in terms of interpretation of the sources were not discussed. In analyzing documents presenting different ways of experiencing a similar situation (e.g., women working in sweatshops) or arguing for different policies (e.g., education of Native Americans), Ellen mainly focused on helping students to clearly identify the claims and to build their own arguments or narratives based on the evidence provided in the documents and on logical inferences. Students were often required to name the author (and the time) of a source, but, again, such identification did not seem to inform the analysis of the content of the source, nor was the reliability of the content usually evaluated. While students were encouraged to take a position in front of the opinions expressed and to judge whether the events narrated were compatible

with their idea of justice, the reliability of the source was not evaluated and therefore it did not influence the interpretation of these texts.

For example, in talking about child labor at the turning of the century, Ellen gave her students an excerpt from John Spargo's "The Bitter Cry of the Children." Students were going to use this reading, together with other articles about women's labor that had been published in various newspapers and magazines, "to create a pamphlet or brochure to bring awareness to the problems faced by child laborers or adult workers." This exchange exemplifies this approach:

Ellen: *We are going to read another primary source. I want you to hold on to your work. You'll need it for your project. Look at the picture. What do you think it's dealing with?*

Student: *Sweatshop*

[the handout showed a large picture of many women sewing hats in a large room]

Ellen: *Look at the title. What group of people?*

Student: *Children*

Ellen: *Why do you think they use children?*

Student: *Child labor*

Student: *Energetic; they don't have to be paid much.*

Student: *Probably they can do whatever they want.*

Ellen: *Who can get into the machine? [Ellen showed a picture of a small child in a factory] What kind of conditions could they expect?*

Student: *Dangerous, horrible.*

Ellen: *What does it mean "horrible"?*

Student: *Fall into the machine, goof off.*

Ellen: *Probably no goof off. Who wrote it?*

Student: *John Spargo.*

Ellen: *We are going to learn how to skim the text.*

[students answered a series of questions listed on a worksheet]

Ellen: *Do you think they played?*

Student: *No.*

Ellen: *Where can you find evidence for that?*

Student: "I have witnessed many pitiable cases of child slavery in northern mills." [quote from the first paragraph of John Spargo's excerpt]

Ellen: *Think Reconstruction. Is slavery a good thing?*

Student: *No*

Ellen: *Look in the other paragraphs.*

Student: *They are stunted.*

Ellen: *What does it mean?*

Student: *They cannot grow.*

Ellen: *Find me two quotes that can back up that children were treated badly.*

Finally, primary sources were not presented in their original format (e.g., handwritten letter or newspaper article's format). On the surface, these handouts actually looked very similar to those containing summaries of textbook's chapters, probably further fostering the idea that texts are first and foremost conveyors of correct information. The task assigned (i.e., create a pamphlet) was also very similar

to other activities that students had completed on the basis of their reading of the textbook (or of the Hakim's text), such as writing journal entries pretending to belong to a particular group, write a newspaper article, or create a political cartoon.

Epistemic beliefs.

Information, opinions, and evidence. In commenting on the statements of the BHQ, Ellen often acknowledged the subjective nature of history. For example, she mentioned a few times that "history is written by the people who win history or the victors, and the people who lose, it's not their side." She also referred to the influence that nationalism and group's belonging can have on the interpretation of past events, mentioning the different views of Croats and Serbs about the roots of their ethnic conflict, the American and British interpretation of the American Revolution and the Boston Massacre, the British and Scottish accounts of the Scottish' rebellion, different evaluations of the Vietnam War, and the casting of Germans as the "bad guys" after WWI, sanctioned with the Treaty of Versailles. Ellen was also aware that different historians identify different causes of historical events, citing as an example the women's right to vote in the United States.

At the same time, Ellen acknowledged that "there is definitely evidence in history, otherwise what is the point of studying it" and that "this is where those journals and those letters" come to play a role. In her view, evidence limits the power of the historian for changing the past too much, so that a historian could not just go back and say "hey, they could have had electricity in 1776 and they just decided to use candles." However, this idea of evidence seemed to resemble more what Lee and Shemilt (2003) called information than what they named evidence. The terminology

used may seem beside the point, but the main difference between the two has important epistemic consequences. Specifically, information is treated as a direct testimony about the past that the historian may, at best, question in terms of its correctness, while evidence results from the work of the historian who, similarly to a prosecutor, asks the sources questions that they were not necessarily designed to answer. As a corollary, reliability is seen as a fixed property of a source of information while it becomes defined in relation to the historian's question in the case of a source of evidence; thus making history possible even in the presence of "incorrect" or "biased" sources.

This view of historical knowledge fits well with what I have described as TR1 and, in fact, Ellen's interview offered several examples of epistemic beliefs characterizing this stance. She also described how she saw these two aspects of historical knowledge coming together, through a process very similar to what Lee and Shemilt called "scissor and paste".

The social science is trying [...] to look at different sides and tries to piece it back together to figure out. I mean, can you be one hundred percent correct? No, because you are not there, but I think history has a bit more than interpretation. I mean, it is interpretation, but if you do enough research...

Interestingly, Ellen provided this comment while evaluating her disagreement with the statement "Historical claims cannot be justified, since they are simply a matter of interpretation." She began by saying that she disagreed with the statement (and drawing the parallel between the historian and the social scientist, which I found particularly suggestive) and ended up by changing her initial reaction to a "somewhat

disagree.” This change of focus from the objective to the subjective component of historical knowledge happened in another occasion during the interview, and was an occurrence that was common across the three teachers and several students.

On one hand, this finding lends some support to the developmental trajectory proposed by Kuhn’s and King and Kitchener’s models and could be interpreted as signaling a movement from an objectivist to a multiplist stance. However, placed within the context of the whole interview, it seems to me that it may signal a position in which beliefs characterizing these two stances coexist. Thus, to Ellen, those journals and those letters really mattered, but the knowledge they could afford regarded the “two sides” of the issues.

De pluribus unum? In the case of Ellen, the idea that evidence is ready made (i.e., it is treated as information in Lee’s terms) and interpretation is opinion went together with the idea that it is important that students understand that “there are two sides of every issue,” and “they get to see the different evidence, and what was happening, and just different opinions.” In describing the historical method, Ellen mentioned that it includes knowledge about “how to break it down, and think about it, and different ways of analyzing history, and look at documents and examine and just determine facts from fallacies.” Students “need to be able to evaluate, they need to be able to look at different information, they need to be able to look at something and realize: ‘Is this a primary source? Was it written during the event, [...], what side was it?’”

These heuristics could facilitate thinking historically; yet, until reliability remains an intrinsic property of the source, they may at best play a role in deciding

what side to choose. Hence, Ellen “absolutely agreed” that learning history required comparing sources and understanding author perspective because “you need to say that there are different sides of the story.” Actually, “if something interests you, read both sides, look at the victors and look at the losers, like see how they justified what happened and then try to find a book that is in the middle, or a documentation that sort of represents it.”

However, it appeared that history stopped at “taking a side”. In other words, by being “able to tear it apart, to pick up the details” and “looking at the who, the what, the when, and the where, and then go back to the why” students can make up their “opinion about what side of history.” Students have the freedom to believe whatever story they choose “as long as they back it up and have their reasons for believing it,” but the warrants for preferring one interpretation to the other (if any) are left unclear. To be sure, there is a limit to the stories considered acceptable. One example would be “the revisionist history where you don’t want to believe in the Holocaust because that never happened.” Interestingly, the evidence Ellen would use for rejecting this argument were pictures from the concentration camps; perhaps a legitimate and persuasive pedagogical choice, which nevertheless suggests the idea that history is at its best when the past can come to us in some sort of unmediated (or so perceived) form.

Historical thinking. Ellen read the documents demonstrating an interest that went beyond the purpose of completing the task. However, she also had the question of the CRT well in her mind, since she was able to discuss the documents in relation to it as soon as she completed the readings. At the same time, she also let herself be

drawn into a discussion with the texts, noting their rhetorical tone and making frequent connections with her experience. For example, while reading Document 1, she commented:

The literalist of the Scripture, note that. I shouldn't say that, but just...I always just get confused about those. Ooops, what page in the Bible gave the map of the world? My teacher used to get mad at me, I was, I am serious, I did miss a page in the Bible; I want to see the map. And she thought I was being sarcastic, but I was honestly being sincere.

She also used the references to check her interpretation. For example, after reading Document 3 she asked herself: "Am I misinterpreting this? It almost sounds as they are saying that the world is round; in the 6th century." This question prompted her to re-read the passage, pay close attention to the language used, and revise her interpretation: "When I saw the vault, that's when I started stopping and I was thinking that the 'over' was sort of giving the roundness; but when they mentioned Moses and it was flat, so the vault goes over it and it keeps extending."

The transcript of Ellen's reading of the texts demonstrates the use of several strategies typical of expert readers (e.g., interpreting, evaluating the content and the features of the text, connecting with prior knowledge, questioning, considering the author) and some heuristics that signal historical thinking (e.g., sourcing). However, it was only after reading all the texts that the use of historical thinking became particularly evident. She began by acknowledging that the documents were not painting a clearly discernible answer and thus she tried to build a narrative by weaving them together and checking if they could all contribute to a reasonable story.

Interesting. This is really tricky, because I don't see here. My interpretation of 5 and 6 is that a person like Ptolemy, he knew that the Earth was round.

This idea of people, in probably Western Europe during the Middle Ages, who changed everything around: 'No, no, we are flat!' The Church impacted that.

Ellen then reconsidered the documents to see if they could support this narrative and tried to “tell the story” following the line sketched in the quote, but she was unable to reconcile it, especially with Document 6.

But that the world was flattened just amazes me, because [...] why would they want to do that, unless they are trying to push up how far we have come. [...]

This also ties back to the whole idea that history can be revisionist, you can sort of make people look more like simpletons, and that they are not the brightest people in the world, or that “look how far we have developed as a culture if our ancestors thought that it was flat.”

At this point, Ellen revisited the documents, checking whether they could fit this new interpretation. She also acknowledged that the idea that medieval people did not think that the world was flat went against her prior knowledge.

I probably would have said that he [Columbus] was part of a group that questioned the flatness of the Earth [...] but after reading 4, 5, and 6 it obviously sort of makes you wonder whether it is revisionist history that makes people look a little bit like they are in the Dark Ages, that they had no clues.

When Ellen read for the first time Document 1, she was amused by some of the language used by its author: “I love their description of Columbus [laughing]: not

educated, can't speak, monotonous." However, at that point, these text features did not trigger historical thinking. Document 6 made her consider Document 1 in a different light; now, it could be treated as evidence for the "revisionist" hypothesis:

"[...] I love this first one, being written in the 1890s; [...] the way that he [Columbus] is a non-entity rebel, an obscure navigator. So he was a nobody and then he comes out. [...] I'd like to see more to find out: Was he just sort of dicing on what these people perceived Columbus to be, or was he furthering out 'He really wasn't'? And so he goes to his intelligence and...yeah, 'to his simplest proposition'. It's so interesting that [...] Document 1 could tie and back up document 6, that the people in the 19th and 20th century were trying to make the Middle Ages feel, a little bit, mentally slower, and too blinded by this whole idea of religion."

Lauren (Class 2)

Goals.

For the present. For Lauren, history was an explanation of "why things are the way they are," "why do we have that, why people act this way, how did this develop." Hence, she would have gladly dedicated more time to current issues because "we are experiencing history right now." These goals were confirmed also by the answers to the Teacher Questionnaire, where Lauren ranked, in order of importance, the following goals: a) how history has formed the way things are today; b) the importance of historical events in our time; c) interpretation of primary source materials. More generally, Lauren stated that her overall educational goal consisted in instilling "a sense of curiosity that will develop into the love of learning."

Lauren identified the need to be “politically correct” as one of the greatest constraints on her teaching. Political correctness tended to appear as especially problematic during discussion of current issues, generating potential conflict with Lauren’s main goals, which included connecting the past to the present. An example of this occurrence and its implications for historical thinking and epistemic beliefs will be discussed in the section describing Lauren’s pedagogical approach.

Primary sources and historical method. Lauren often demonstrated being well aware of several heuristics characterizing historical thinking. Teaching how to interpret primary source material was among her main goals and she often used primary sources in her class. However, similarly to Ellen, the main purpose for using them was “to know that it actually did occur, it is not just something that I’m telling you about, it’s not something that you read on the internet, it’s not something that you read, that your friend is telling you, but it actually happened and we have proof.”

In addition, Lauren was studying for a Masters degree in History at the time of the study. When asked to compare her graduate studies with how she was teaching her class, she did not point to any radical difference, apart from the fact that her master’s class was “straight lecture,” they used “harder primary sources,” and the professor did not “necessarily go over what the interpretation is.”

I found this final observation particularly striking, because the lack of exposure of K-12 teachers to disciplinary thinking required by graduate studies is often cited as a hindering factor in the teachers’ ability to promote this kind of thinking in their classroom. This case suggests that the promotion of disciplinary

thinking may in fact need to become a much more explicit goal in graduate schools as well, and, as such, be openly addressed.

Details and bare bones. According to Lauren, teaching history well required the time and willingness to delve deeply into topics, examine several sources, give more space to social history, and pay attention to details. Unfortunately, the way in which schools were currently organized constrained, according to Lauren, the possibility of going “into the nitty-gritty of things” and share with the students “all the other cool little things.” Among the circumstances that prevented her from doing so, Lauren mentioned the need of being politically correct and specifically the feeling that she could not “do a lot of readings” because teachers had “to be cognizant of all kinds of different people.”

Lauren also lamented a lack of student background knowledge, which prevented meaningful class discussions, and the need to cover so much material in such a small amount of time. At the same time, mindful of time constraints, she also noted that she did not have “a problem in doing just the bare bones, just to get the information across.”

Writing in history. Differently from Ellen, Lauren mainly focused on the content of the essays and did not pay much attention to their structure. She particularly praised essays that were demonstrating “extension of thinking” by including ideas that, although related, broadened the answers to the questions and reached beyond the obvious. For example, in considering why and how technological developments played an important part in 20th century wars, Lauren appreciated those

essays that did not focus exclusively on weaponry, but considered also the advancement in medicine and the implications for the Cold War.

In her own practice, Lauren's overall focus seemed to be on the accuracy of substantive knowledge; even when her attention was on "the concept" (e.g., "that the Progressive [were] to help society"), the main ideas she was looking for were the ones proposed by the textbook narrative (*The Americans: Reconstruction to the 21st Century*, published by McDougal Littell).

We usually have rubrics of what to look for, or I take my BCR [Brief Constructed Response] from the textbook, [...] and they have the answers written out, they have a list of what they should write. [...] And then, of course, the perfect one does that extension of knowledge, it doesn't just spit it out.

Interest. Lauren clearly discriminated among the various activities listed in the questionnaire, stating a very frequent participation in some of them and a complete lack of involvement in others. Some of the high scores may be related to the course work that Lauren was completing for her master's degree, but some reflect Lauren's general interest in the past. Specifically, she often read scholarly history books, engaged in historical inquiry, and wrote history-related papers. She very often visited museums and historical sites, read historical novels and watched historical documentaries, as well. Her total score on the Interest Questionnaire was 72 (max. score 117).

Pedagogical practices.

General traits. A well established, enforced routine was an essential component of Lauren's class, as she remarked at the beginning of a test, reminding a few students about the need to be silent: "Please, please, if anything, we have a routine in my classroom." The sequence of classroom activities tended to remain the same across classes and, in addition, Lauren introduced a few clear rules at the beginning of the semester and expected students to abide to them. Most rules regarded procedures related to the collection of homework, grading, and expected level of social interactions during class. For example, the board in the back of the room stated in big letters: "Homework: place in class folder *before* the bell." Grades were copied in a grade sheet and signed by parents. The desks were arranged in rows and students sat at their individual desks, facing the wall used for projections.

Several exchanges between Lauren and her students regarded homework and testing, points to be gained or lost. Assignments often had the goal of forcing students to pay some attention to the content of class; for example, Lauren always assigned a worksheet to complete while students were watching a video. An incident is particularly exemplary of Lauren's attempt to get students actually exposed to the material proposed in class (videos, textbooks, or other kind of texts). In introducing a video about industrialization and urbanization, Lauren asked the students to number 20 lines in a blank piece of paper and explained that they were "going to see a lot of primary sources and not much action." Then she briefly mentioned the main events addressed by the video and explained that students needed to list "20 facts from the movie," specifying that they were expected to use "facts from the whole video," and

thus they needed to pace themselves. Finally, she remarked that “these [were] easy points, but it [was] not free.” In most cases, it appeared that a low level of engagement and an overall shallow understanding of the material were sufficient to get credit for the work done.

Lauren often lamented a lack of student discipline and disciplinary issues arose during most classes. To face the situation, she used various classroom management techniques, from assigning seats to issuing warnings, to detention. Lauren was particularly concerned with the easy access that students had to partying and drinking when out of school and believed that this overall permissive attitude negatively affected their engagement and interest in academic activities.

While Lauren succeeded in keeping the control of the class, her relationships with the students were heavily mediated by established regulations. The disagreements that easily developed between her and some of the students about rules, grades, and disciplinary actions tended to negatively affect the classroom climate. Students paid close attention to Lauren’s lectures and overall complied with class requirements. However, with the exceptions of very few instances, their contribution to the class dialogue tended to be superficial and their effort strictly limited to what required by the tasks and rewarded by points. It seemed that, as an old proverb noted, this approach succeeded in leading most of the students to the water, but could not make them drink.

Lectures and recitation. Students began each class by writing a journal (for about ten minutes), which usually consisted in answering a question about the topic addressed by the assigned readings and, occasionally, current events (i.e., Iraq and

identification of an important event for that specific year). Only once during my observations did the journal require students to go beyond what they learned in the textbook, asking them to respond to the following situation: “You have invested all your savings on the newest technological innovation. It turns out to be a bust. You are wiped out—no credit—no chance for credit—your family can’t bail you out. What *do you do?*” Students were surprised and in fact asked where they could find the answer to this question, suggesting they were not used to this kind of prompt. Lauren answered them that, in this case, the answer had to be sought in their own heads. After journal writing, Lauren usually used a mix of lecture and recitation to review the topic of the lesson and to revisit concepts she considered particularly important.

The textbook had a central role in Lauren’s class, as she explained to the students at the beginning of the semester:

You need to read the textbook, chapter 5. If you have problems understanding, you need to use your textbook. We use it for our tests. I’ll give you examples, so you know all the words for the tests and for your ECRs.

In fact, Lauren expected students to read the textbook whenever they had some free time in class (e.g., while waiting that other classmates finished an assigned task).

During her lectures, Lauren often used the overhead to share her notes with the students, because “it makes it clearer for the kids.” These notes had been prepared with a few colleagues of hers and were based on the students’ textbook. Lauren usually added further details she found interesting about the specific topic and tended to highlight relations of cause and effect.

She also suggested specific study strategies, mainly aimed at fostering memorization of first order concepts (or “vocabulary words”). For example, in talking about the Populist Party, Lauren remarked the importance of avoiding confusion with the Progressive Movement and suggested the link with the word “population,” which, in turn, could trigger the link with that part of population made up of farmer (and thus avoid confusion between Populists and Progressives). Lauren also tried to get students ready for the more independent college environment, remarking the importance of taking good notes and suggesting that students pay particular attention to concepts repeated several times because these ideas are usually addressed in the tests. With the exception of very brief exchanges, students were usually silent while Lauren was lecturing and took notes of what she said, copying what she was showing on the overhead.

Documentaries were often shown as an alternative to lecturing. In these cases, Lauren tended to interject several comments to the events depicted in the videos, highlighting connections with the curriculum or calling student attention to specific features depicted in the video (e.g., “look at the clothing”). In a few cases, she used video clips from popular movies to illustrate particular events (e.g., Homestead Act) or convey the feeling for a certain period (e.g., Modern Times).

Although she often implied that the documentaries were showing several primary sources, Lauren did not discuss the perspective or, more generally, the nature of the documentary as a source in itself. In a few cases, Lauren introduced a specific video clip as a primary source and asked students to write their journal on it (e.g., “You will be watching a video of Eddie Rickenbacker. This is your primary source.

Write ten sentences describing his life.”). In most cases, students were asked to complete a worksheet while watching the video; occasionally, videos were shown in the last part of class, and Lauren left students the possibility of choosing between watching it or doing their homework.

This lecture/recitation approach did not radically change when the focus was on current events. The main difference regarded the fact that, in this case, the burden of providing information rested mainly on Lauren, since no other sources were considered and students mainly contributed personal experiences. Given also the ever looming time concerns, current events tended to be presented in coarse terms and without the benefit of multiple perspectives. Lauren also refrained from answering questions that she perceived as value laden, such as one regarding whether Iraqi insurgents found beheading pleasurable. Beside a general reference to the fact that Iraq had a very ancient culture and that religious beliefs played a relevant role in these matters, Lauren placed the responsibility of answering entirely on the students, saying that they were old enough to decide for themselves about these issues.

Tasks. In class, Lauren often asked students to read from the textbook and complete worksheets, which mainly aimed at rehearsing and organizing the lesson content. Students mostly completed these worksheets by themselves, although occasionally they were allowed to work in groups (which usually meant that each student did only a part of the work and copied the remaining answers from the other classmates).

A Web Quest on the Age of Imperialism, very similar to the one described for Ellen’s class, was an alternative way to present texts to students. A long list of

questions forced students to read all the sections of the webpage and students were graded on the number of questions they answered. The questions mainly asked about specific facts included in the readings (e.g., Mahan believed that America's survival depended upon what?) or addressed the comprehension of particular terms or sentences (e.g., For the emperor to consult with barbarians was unthinkable. Who are the "barbarians" in this reference?).

Similarly to Ellen, Lauren used Hakim's "A History of Us," as complementary to the textbook; additional texts were occasionally distributed in class. Yet, even when the readings presented different perspectives on a particular issue (e.g., views of the African American Movement according to Du Bois and Washington), the discussion of the texts was very brief (few minutes).

During these activities, Lauren often interjected the narration of interesting events illustrating the issue under examination, added further information about the topic, made connections with popular movies and documentaries, and pointed to related artifacts available in museums. In some cases, the content of a particular lesson was divided among different groups (e.g., inventions) and each group prepared a poster illustrating the topic assigned. Posters were then shared with the rest of the class.

In other cases, students revisited the topic of the lesson by writing mock articles or letters (e.g., a newspaper article about a specific aspect of Progressivism, using the style of the muckrakers, or a letter home, pretending to be one of the Pioneers) and by brainstorming possible course of actions giving particular circumstances (e.g., Oregon Trail). In various occasions, students were asked to

include a pictorial representation of a particular event or period. This kind of task sparked a few discussions about contextualization (e.g., phones looked quite different at the turn of the century) and Lauren appreciated their potential for pulling together ideas on a certain topic. However, in overseeing student work, Lauren focused students' attention on demonstrating their factual knowledge: "Hey, the drawing is very nice, but I'm not going to give you much for it. So, write the article first, the rest is gravy. I want to see what you know."

The importance of contextualization was underscored by Lauren several times, and she tended to consider it a mark (or the essence?) of historical thinking. For example, when students were asked to pretend to be pioneers and to write a letter home that explained the tough conditions on the frontier, Lauren underscored that the letter had to be historically correct. Thus, when a student suggested that pioneers could get the seeds that they needed by stealing them from someone else, Lauren remarked: "Think of yourselves as historians; in the '800s they did not do that."

Use of historical sources. During the interview, Lauren reported that including primary sources in her lesson plans was "her thing, her thrust" in the way of implementing the curriculum. Yet, primary sources were mainly used in her class as facilitators for increasing familiarity with the topics of the curriculum or for illustrating particular aspects of it. In asking students to describe pictures or cartoons, which in a few cases were taken from the textbook, Lauren reminded them to use the "vocabulary words." Thus, for example, the word "soddy" became very important in the description of a prairie house, because it brought with it several factors influencing the life on the prairie (e.g., lack of wood to build houses; atmospheric

conditions; conservation of food). Pictures also sparked speculations about the presence of certain elements (e.g., how they could have a window in a soddy house). In these cases, Lauren encouraged students to contextualize their guesses within the historical period.

Epistemic beliefs.

Interpretations, facts, and opinions. Similarly to Ellen, Lauren also acknowledged that history “is a lot of interpretation,” although not *simply* a matter of interpretation. In particular, Lauren believed that it was important for students being “able to discuss [their] ideas and a bunch of other people’s ideas.” Although Lauren saw a limit to the knower’s subjectivity in facts and primary sources, she never mentioned how facts were selected in the first place or how historians interrogated primary sources, an occurrence that suggests a lack of coordination between the objective and subjective aspects of historical knowledge.

She often referred to the importance of understanding the perspective of an account’s author. However, when pressed, she seemed to lack a method to move under condition of uncertainty. For example, to substantiate the statement that history is interpretation, she cited the case of Jerry Ford, who has generally been looked down upon by prior historiography, but was now appreciated for having helped his country. When asked how she would choose between the competing interpretations, she acknowledged the difficulty of the question and challenged current harsh interpretation of the Bush’ presidency because people were likely too clouded by present concerns (e.g., the Iraq’s war).

Finally, when pressed to describe what other factors, beside interpretation, constitute history, she revised her first answer and, similarly to Ellen, moved toward the subjectivist end of the continuum. Lauren was reacting to the statement: “Students need to be aware that history is essentially a matter of interpretation.” I report the exchange in full, because I believe it is a good illustration of this change of mind.

Lauren: I don't think it is essentially a matter of interpretation. There are so many different things. I think they need to be aware that there is a lot of interpretation in it. That's a good question, I guess, it's a matter of who is interpreting, I do, but I don't think that it is essentially a matter of interpretation, I think that's part of it, I don't think that's the only thing that makes history.

Interviewer: What are the other things that you see in it?

Lauren: Oh, you know what? When I was reading it for the first time, I was thinking...[silence]...I guess it's true, now that I am reading it again, it is essentially a matter of interpretation, who is looking at this aspect, who is interpreting what is happening, so I think it is essentially a matter of interpretation.

“Playing” sides? What I found particularly remarkable in the case of Lauren was that she defined herself as “a very fundamental person,” a “pretty much right or wrong kind of person.” As such, she acknowledged that she had “a hard time with a lot of social issues,” and that, sometimes, she perceived the necessity of being politically correct as a constraint on her teaching.

At the same time, Lauren also believed that she needed to provide the students with the multiple sides of the issues examined in class, without letting her own views come too strongly to the forefront. In so doing, she seemed to feel compelled to embrace an epistemic stance that considered all sides equally legitimate although she would embrace a very specific interpretation for herself. As a result, Lauren felt the discomfort of silencing what she was while, at the same time, leaving the students without a method to develop their historical reasoning.

Historical thinking. In working on the Constructed Response Task, Lauren stopped after each text to summarize what she perceived as the main points of each document. First, she seemed to determine whether the source was suggesting the hypothesis of a flat Earth or of a round Earth. Then, she added other ideas conveyed by the texts. Her reading was a bit rushed and the restatements were sometimes inaccurate.

Uh, so Document 2 says that it is round also, and that there is people on the opposite side of the earth and that they are just like us, there is people, there is food, and so it is absurd to say that someone may take a ship and travel the whole wide world and cross from distant region...[re-reading]. So, OK, it's saying it's not. Let me go back.

The think-aloud does not suggest that Lauren came to a successful re-interpretation of Document 2 and, at the end of the task, she admitted that she found it confusing. She was also not sure about the interpretation of Document 6, but in that case she dismissed the document from further analysis. During the think-aloud, she never referred to the authors of the texts, but always referred to them as “Document

X". There is also no evidence of intertextual reading; overall, Lauren appeared to take the content of the texts at face value.

After reading all the documents, Lauren concluded that "from most of the articles they think that it was flat." This was particularly surprising, since only after reading Document 3, Lauren had concluded that the text was saying that the earth was "not round." In other two cases (Document 2 and 4, and we might infer also Document 1 from the quote reported above) she had deduced that the documents were supporting the belief in a round Earth. Document 6 was dismissed and there was no reference to the shape of the Earth in the summary of Document 5. Where did this idea come from?

When asked to explain the criteria that guided her answer, Lauren said that she would look at "how many documents spoke about a side." She added that she "would also look at the time frame." This last suggestion seems to imply contextualization. However, Lauren appeared to rely only on her prior knowledge of the period. She did not let the texts challenge her prior ideas nor, conversely, did she use her prior knowledge to evaluate the content of the texts. In this specific case, she knew that religion was very important at Columbus's time and "clouded things"; thus, she concluded that "whatever the religious people thought, that was the general idea at the time." Similarly, she belittled the idea that the Greeks believed in the roundness of the Earth because she found the reasoning unconvincing on the basis of her understanding of the measurement process: "Well, the Greeks, you know, came up with measurements and things but how [...] can you take measurements when you haven't gone the way around the world?"

Danielle (Class 3)**Goals.**

Roots and cycles. History had a profound personal significance for Danielle. She loved investigating her family history and knowing where she came from. On the other hand, she also believed that “history cycles” and “it tends to repeat itself.” For this reason, one of her goals for her students was to understand connections across time and with their personal experience. In the former respect, this meant being able to identify what changed and what remained the same: “America has changed; there have been periods in which history has repeated itself, and has repeated in a particular way. So, what changed? That particular part is what I try to connect.”

In respect to connections with personal experience, Danielle believed that this was a key factor in making students interested in what was being studied, in “turning them on.” She referred to a very positive experience with a low level class in a technology program that got very interested in the World Fair; the occurrence of 9/11 also sparked interest in the history of the United States.

Primary sources. While these responses during the interview may suggest that the main focus of Danielle regarded substantive knowledge, Danielle’s answers to the Teacher Questionnaire indicated another set of goals. Specifically, Danielle stated that her major goals in teaching history regarded introducing primary documents with the aim of generating interests and enabling students to experience “living” history. A connected goal regarded the creation of engaging lessons fostering more active learning. All teachers in this study underscored that a general

lack in students' interest deeply hindered deep levels of understanding. Hence, introducing primary sources in the curriculum was conceived as an attempt at sparking some situational interest with the hope to increase students' engagement with the subject matter.

In addition, and similarly to Ellen and Lauren, Danielle used primary sources as facilitators of learning. As maps and visual representations of some aspects of the lesson (e.g., map showing alliances during WWI) could facilitate understanding of specific concepts (e.g., Central Powers), primary sources could convey particular concepts (e.g., ultimatum) or even relations of cause and effect (e.g., the long-lasting effect of the Treaty of Versailles).

When I used that one map with the alliances, what I wanted was to have a visual of what was happening and where they were located and when I use the documents, was kind of a DBQ, I wanted them to have the main causes of WWI. So, in reading the documents then, instead of coming from me or the textbook, it's coming from an actual person who was there. Maybe it will stick with them a little better.

While Danielle had often experienced that bits of information tended to “stick” better when conveyed through primary sources, she was also aware of the risks of this approach. In fact, students tended to remember “not the actual documents, but quotes,” and sometimes they reinforced prior misconceptions.

In addition, Danielle believed that making students build understanding from primary documents would make them “think it through.” While Danielle had found this approach successful in the past, she was struggling with her current classes, since

a high percentage of students were not willing to work on the assignments and expected that she provide “the answers”. In this situation, group work was also not providing any incentive to thinking, because “it [was] not a collective brain power on it, focused on the information; it [was] more ‘I sit around and maybe they shall give me the answers’”.

Writing in history. In evaluating students’ responses to essay questions, Danielle focused both on the structure of the essay and on its historical content. In terms of structure, she looked for a thesis statement clearly addressing the question, followed by paragraphs focusing on specific ideas and providing explanations and factual details. Finally, she was expecting that the conclusion summarized the aspects explored and added new ideas. From this point of view, she referred to the style taught in AP US History classes for answering the Documents Based Question (DBQ), which consisted in a sequence of “main idea, detail, explain.” Danielle also paid attention to the use of transitions and the overall coherence between the categories included in the thesis statement and the main ideas discussed in the paragraphs following it.

In terms of historical content, Danielle preferred essays that clearly connected factual information and what she called “explanations.” In other words, she was expecting students to clarify the relation between the details they were providing and the aspect of the question they were addressing in a certain paragraph. Although Danielle kept using the words “information,” “facts,” “details,” “examples,” and she would have wanted students to include what had been discussed in class, in the readings, or in the homework, the work of selection that she was expecting the

students to do had strong similarities with the process of building evidence out of the remnants of the past described by Lee (2005).

Danielle had also several ideas about how to provide feedback on essays and what kind of follow-up activities to implement in the class in order to target eventual misconceptions, the appropriateness of the evidence provided, and the structure of the essay. However, Danielle also admitted that she rarely assigned four/five paragraph essays because she was teaching 180 students and the time necessary to evaluate this kind of assignment was too great.

Interest. Among the three participant teachers, Danielle's score on the Interest questionnaire was the lowest (56 out of a max of 117). Yet, she often mentioned during her formal and informal interviews several occurrences that implied her involvement in the activities listed in the questionnaire. It may be that Danielle's definition of "often" tended to be stricter than Ellen's and Lauren's ones. In relative terms, Danielle listed visits to museums and historical sites and construction of history curricula as the activities in which she engaged most often. With lower frequency, she also reported reading scholarly history books and historical novels, and watching popular movies on a historical topic.

Pedagogical practices.

General traits. The walls of Danielle's classroom were covered with nice pictures and posters relevant to the period of American History that was taught; interspersed, there were posters showing beautiful photos of natural settings, which invited students to "soar high," persevere, and respect each other. Students sat in two, double rows groups, facing each other; the overhead projector was placed in the space

at the center of the room and Danielle often stand there during class. In a way, this setting reflected Danielle's desire to share with her students a passion for understanding the richness of the past and to foster a reflective and striving attitude toward learning in general and history in particular.

Classwork was carefully planned, with sequences of activities, readings, homework, and dates for quiz and exams announced well in advance. A calendar was often reviewed and updated at the beginning of class and included all the material and assignments discussed. Yet, the schedule and style of each class varied significantly; the sequence of activities differed from class to class, and Danielle used a broad repertoire of tasks and assignments. Among these, a regular assignment consisted in review questions, which accompanied the reading of the various sections in the textbook. The questions tended to focus on the main idea of the section and prompted students to identify its meaning in the broader context of the topic explored (e.g., "How was the work of the writers of the 1920s a reflection of the roaring 1920s?").

The pace of class tended to be fast, despite the fact that Danielle's questions and tasks could potentially solicit a good deal of analyses (e.g., comparison across multiple sources) and reflection. In addition, she always appeared very knowledgeable and precise, although she had no trouble in admitting her limits. For example, in reviewing the Battle of Little Bighorn, a student asked whether the chiefs of the Indian tribes were executed; Danielle began answering by saying that Sitting Bull lost his life, but not remembering where or how she added that she needed to check that. Overall, the content of Danielle's lectures, which went beyond what conveyed by the textbook, and her choice of additional sources and activities

demonstrated that she had dedicated a lot of personal reflection and research to the topics she taught.

Danielle tended to collect homework at the beginning of class, and, occasionally, reminded students of impending quizzes or tests and how to prepare for them. However, tests and grades were clearly not the focus of her class, and she rarely referred to them while working on the various topics.

Contributions from students were also encouraged, yet they tended to remain mediated by the teacher. For example, the outcome of work done by students in groups was usually reviewed at the whole class level, with Danielle validating or integrating students' answers. In this respect, Danielle experienced some frustration, too; with the exception of four or five students, who steadily participated to the class dialogue and whose contributions tended to be thoughtful, the class that I observed demonstrated a very low level of interest. The lack of effort regarded also the completion of homework, affecting the possibility of meaningful participation in class; during the semester, grades remained low for most of the students. Although upset by such a lack of response, Danielle did not usually push students too strongly; she tended to tolerate student disengagement as long as it did not affect other students or created confusion.

“Grounded” lectures. Danielle used lectures mainly to introduce new topics (usually corresponding to chapters in the textbook). She organized them around specific movements in American history (e.g., the settling the West; the rise and role of big business in America), and used various kinds of sources (e.g., pictures, maps, and data) to ground the narrative. In a way, the analysis of the sources guided

students in finding evidentiary support for a narrative explaining the origins and effects of the movement identified. During these introductory lectures, Danielle usually provided organized notes, which linked together the main concepts, ideas, and events introduced in the unit and identified causal relations among them. For this purpose, Danielle used various techniques, such as graphic organizers, partially completed tables, and acronyms, to foster memorization. Students, if not in AP classes, were not expected to take notes by themselves and thus copied the ones projected in class.

For example, Danielle introduced the Gilded Age by using a concept map that suggested causal relations between the graft and corruption of the era, the gap between the few rich and the many poor, and the birth of the Progressive movement (similar concept maps were used also by Ellen and Lauren). After that, Danielle showed students a picture of the Vanderbilt's mansion, asked students whether they knew about him, told them the story of this industrial family, and introduced the question about whether these entrepreneurs could be better characterized as industrial leaders or robber barons. Then, Danielle showed students a table, reporting the income (translated into 1998 USD) of some of the richest people in American history (e.g., Rockefeller, Carnegie, Vanderbilt, and Gates). She also provided other information, such as the contributions to charities and the average wage of an employee.

Students spent some time exploring the list, identifying the various businesses in which these entrepreneurs engaged, and noticing when members of the same family appeared among the richest people in America. Once students had shared their

observations, Danielle introduced a graphic organizer highlighting relations of cause and effect between several of the concepts examined in the unit (e.g., the industrial revolution needed labor, which required an increased population and thus facilitated immigration). Several notes followed, together with further examples of particularly complex concepts discussed in the unit (e.g., forms of business consolidation).

Danielle believed that students could profit from the structure provided by her notes and encouraged them to use them for study purposes. Yet, she tended to apologize for these long lessons, which she probably conceived as a necessary evil. Thus, she tried to include in the same class also some activities that required active involvement of the students (e.g., political cartoon analyses; review games).

Danielle usually enriched her lectures by introducing personal anecdotes, and fostered connections with students' lives by asking them to share experiences related to the topics examined (e.g., the origins of their families, while talking about immigration or their work experiences, while addressing the regulations introduced during the Progressive era). The references to different kinds of evidence during her lectures were numerous and Danielle tended to "back up" her statements by referring to specific events and data. However, in a few cases, she made students work on the content of a chapter by making them complete crossword puzzles that revisited the main concepts, people, and events addressed in the textbook. In these cases (which remained exceptional during the semester), Danielle felt overall uncomfortable. She tended to justify her choice with the need to cover in a short time a lot of material (i.e., chapters in the textbook).

Tasks and activities. Most of the tasks that students completed in Danielle's class or at home involved some kind of primary sources; given their potential influence on the questions investigated by this study, I devote the next section to their specific description and analysis. In this section, I focus on other activities that took place in Danielle's class.

Danielle used maps often. Maps served the purpose of illustrating specific concepts (e.g., Manifest Destiny), to summarize state of affairs (e.g., alliances during WWI), and, more generally, to familiarize students with the setting of the events under consideration (e.g., imperialism in 1900). Students were usually asked to complete, label, or color the maps, which became part of their study material.

Danielle also used documentaries and movies to illustrate specific examples of trends and issues examined in the curriculum. Movies were mainly used for illustrating specific issues and fostering reflection. For example, students watched "The Long Journey," a story of an immigrant boy and his family at the end of the 19th century. The questionnaire accompanying the movie drew students' attention to a few factual aspects depicted in the video (e.g., "Where are the immigrants arriving at the beginning of the film?" "How did the family make enough to survive?") and one, last question asked students to evaluate whether, given the grim conditions faced by the immigrants, it wouldn't have been better for them to remain in their homeland.

The differences (ethnic, social, and cultural) characterizing the United States in the early 20th century were further discussed after watching "The Lost Battalion," a movie based on the events lived by an American Battalion toward the end of WWI. In this case, the movie guide provided a brief history of Major Whittlesey and of the

events recounted in the movie, two questions addressing how the movie portrayed the composition of American society during WWI, and one question asking students to identify the characteristics that made the men of the Lost Battalion American heroes.

Documentaries were sparingly used as alternatives to lectures, with the main purpose of conveying a narrative. Danielle was particularly appreciative of the Peter Jennings's series, and students watched a few of these videos in class. Also in these cases, students were asked to complete questionnaires while watching the documentaries. These questionnaires tended to be much more structured, sometimes in the form of "fill-in-the-blank" statements (e.g., "In 1900, there were _____ cars and less than _____ miles of concrete roads"). Danielle tended to show the entire video and she did not usually comment on it. However, at the end, students' answers were briefly reviewed in class.

Other activities served the main purpose of reviewing factual information and first order concepts, sometimes in preparation for upcoming tests, sometimes as a motivation for reading the textbook, and in some cases as a quick, formative assessment of a specific concept just discussed in class. Danielle used various games format (e.g., Jeopardy; The Betting Game), crossword puzzles, matching items, and multiple choice items.

Finally, Danielle often gave students additional texts, to integrate or deepen the topics that were addressed in class. In these cases, she guided student reading of the texts by providing questions aimed at identifying key ideas, fostering comprehension and evaluation of the arguments exposed in the texts, and prompting connections with the broader historical context.

Use of primary and secondary sources. Danielle introduced several primary and secondary sources during her lectures; she often showed pictures and various representations of census data (or other data pertinent to the topic). She also consistently referred to some piece of evidence to support her statements and prompted students to do the same, often asking them to quote evidence from the texts under discussion. For example, in analyzing a political cartoon by Joseph Keppler, titled “The Bosses of the Senate,” Danielle asked students who the large figures in the top hats represented. A student answered that they were the big corporations, who, with all their money, were the owner of the Senate. Danielle’s question followed: “How do you know?” Students volunteered that “They are in money bags,” and that “The others are very small.” Danielle kept inviting students to look at the body language and to observe closely the particulars of the drawing. Yet, Danielle very rarely shared with students why she selected certain sources and how she found them, why she thought they were reliable, or, more generally, what process she followed in building a narrative based on them.

Although different perspectives were often considered and contrasted (e.g., Rockefeller’s views of industry and popular perceptions of big corporations; Wilson’s point and view and Zimmerman’s perspective), the process of analysis of sources was seldom explicitly addressed. From prior years, students should have been familiar with the APPARTS strategy, an approach that guided their analysis of a document (textual or pictorial) by noting the author (A), place and time (P), their prior knowledge of the topic (P), audience (A), reason (R, i.e., why the document was written), the main idea (T), and the significance of the document (S). Only in one

case, I observed that students were explicitly directed to use it. Half of the class seemed to remember the strategy with no difficulty; however, its application to the specific case (a political cartoon) was very difficult, since there was no clear indication of where the cartoon was originally published, and of who its author was.

In one other case, I observed a brief discussion regarding the reliability of sources. Specifically, students had contrasted two accounts of the Pullman strike, identified whether the authors were for or against the Pullman Company, compared their reports about the company's levels of profit and control and their descriptions of the workers' living conditions, and considered the sources used to write the accounts. In reviewing the assignment, Danielle prompted students to quote directly from the accounts in justifying their answers and students tended to do so with little difficulty. They also easily identified the sources used by the historians in building their accounts. Then Danielle asked students what account they found most convincing. When students unanimously decided that it was account A, the one presenting the most varied sources (as Danielle had previously noted), Danielle asked:

Danielle: *How would you label the sources of historian B?*

Student: *Biased.*

Danielle: *Yes, they are all from Pullman's.*

This short exchange concluded the evaluation of the two accounts.

In a few cases, students worked in groups (usually using a "jigsaw" approach) to answer a key question on the basis of multiple sources. These sources ranged from newspapers' clips (e.g., on the sinking of Lusitania), excerpts of government's acts (e.g., Pacific Railway Act), public speeches (e.g., President Andrew Jackson's

Message to Congress “On Indian Removal”), and political cartoons. Sometimes, the “document” consisted in a description of the actual primary source (e.g., Homestead Act), with the addition of background information about the historical context and the historical significance of the source. In these cases, a small image of the actual source was generally included, but students were not directed to use it, nor was it readable in that format.

For example, students examined the government’s role in the settling of the West by reading five sources: President Andrew Jackson’s Message to Congress “On Indian Removal,” Pacific Railway Act, Homestead Act, Treaty of Fort Laramie, and Dawes Act. Only the first two documents included excerpts from the actual source. All the remaining documents had only a description of the content of the source. Danielle asked students to identify one key word that could capture the government’s role suggested by each document (e.g., relocation, assimilation). The focus remained on the content of the texts, and there was no discussion about the different nature of these sources. In addition, each student read only one of the documents and, although students were supposed to teach each other about the source they read, most students ended up by copying from each other the “key words.”

Later in the semester, I observed a similar dynamic, when students used the same approach to address the reasons for the success of the prohibition movement during the era of progressive reform. Also in this case, the collaboration within the groups was minimal. The whole class discussion was quite fast and it focused on the content of the documents to address the economic, social, and moral aspects of progressivism, which was the goal of the class. The nature of the sources and their

point of view were rarely mentioned, although Danielle, in introducing the task, had noted that in a few cases, two different perspectives about a specific issue were offered (e.g., one favoring the prohibition amendment and one against it).

Danielle also introduced multiple primary and secondary sources for integrating the textbook and deepening the understanding of specific topics. For example, students read excerpts from “The Jungle” and from the Meat Inspection Act, together with a brief paragraph on the supply curve while studying the Progressive Reforms. They also answered a few questions revisiting some key ideas explained in the readings. In this particular case, I was surprised by the speed (about 10 minutes) with which students read these texts (roughly 4 pages in length) and answered the questions. Danielle interpreted it as a normal occurrence with this group and read it as a positive indicator of students’ reading abilities.

Epistemic beliefs.

Digging deeper. “For me [history] is the investigation of the past.” This is how Danielle began responding to my Grand Tour question about what history was for her, and, in a sense, I believe that much of her thinking revolved around this idea. What drove this investigation? According to Danielle, both the investigator and the sources at her disposal played a role. Indicative of this belief was her reaction to the statement “The facts speak for themselves.” She began by saying that she “almost agree[d],” but then quickly asked “[W]hat constitutes the fact?”, and answered her question by saying:

Probably the date an event happened, that’s pretty much a fact. Maybe who was involved in it, that’s pretty much a fact. So those in and of itself, but it

depends on what you are going to call a fact, when you are approaching a historical event, what are you calling a fact? Students may take a look and say: "That's a fact!" Not really, not really.

Danielle was also well aware of several heuristics that facilitate historical thinking. For example, she realized very clearly that historical accounts have an author and that the warrants of historical claims are in the evidentiary tracks provided by the historian. In addition, she was not at a loss in the presence of biased sources, because the reliability of claims could be ascertained by considering, for example, the author's purpose in writing the account and by corroborating it with other sources. Revisiting the idea of what constitutes a historical fact, she mentioned an activity that she often carried out with the students.

Usually, we use scenarios of something they may be involved in, what is fact and what do you think it's opinion? And there are evidences that we are giving them: an object, a diary. Which would you say is a fact and what an opinion in this particular case? We have eyewitnesses that say this, but then she is writing something different into the diary, so which would you rather go for? Which would you believe most?

Although Danielle mentioned the difference between facts and opinions, the entire interview appears to support the hypothesis that Danielle viewed historical facts as emerging in the context of a relation between an investigator (who brings questions and perspective to the table) and some remnants of the past. She was also aware that investigators select among available evidence and, although she did not

gave into the belief that history is just a matter of opinion, Danielle believed that historical accounts needed to be read critically.

I don't think that historians go out there [and make up the past], maybe some historians have embellished it up a little, but again, I would, I guess, take a look at the historian's background, maybe what they have written in the past, their approach, and again, what sources believed in order to come to that, and be a little skeptical at first.

Danielle would not stop here, though. Since she did not expect “that the historians use all the available sources,” before using their work, she would do some research herself. It is at this point that an epistemic shift seems to occur. The aspects of Danielle’s thinking reviewed so far seem compatible with the criterialist stance. However, other statements from the interview suggest a more complex view. Specifically, in taking up the role of historian, much more weight got placed on the objective aspect of knowledge and interpretation came to depend on the sources at one’s disposal.

It depends on what documents you are looking at. What type of evidence you have will lead your interpretation of that particular history. You will need to look at all aspects of it by having, I guess, you will need more reliable sources, depending on the interpretation of the events.

Thus, good inquiry came to be defined by the sources that one gathers, under the assumption that a disciplined method of inquiry would give more weight to accounts coming from “those that actually experienced it.” This attitude at “digging deeper” seems to imply an ultimate desire for finding out about the past in some

uncontaminated and certain form. At the same time, the awareness that the remnants of the past that we may find are intrinsically biased, left the question about the relation between objective and subjective aspects of historical knowledge still open, as this quote illustrates:

For me history is never just the facts, because you don't really know what occurred unless you go in and research it, and then you know for sure what happened during the time period. So you can gather information about a particular historical event, up to a certain point, but depending on the documents that you pick or the people that you talk to, there will always be bias. I guess....

Historical thinking. Danielle's performance on the CRT was overall consistent with several aspects of her thinking emerged from the analysis of the interview. In particular, Danielle demonstrated to be often aware of the author of the texts. This emerged clearly after reading Document 3 and Document 4. Danielle read the whole reference and, not knowing much about the authors of these documents, she focused on the titles of the works and found in it confirmation of her hypothesis that the documents addressed the conflict of religion versus science at a particular point in time: "Science and theology, just the title where this is coming from, 'warfare of science with theology'. You think religion versus science, coming out again."

Interestingly, in the cases in which she reflected on the source, in interpreting its content she explicitly addressed its author (e.g., "what *they* are saying is more, maybe oblong"; "so *they* are saying it is a sphere, but it is denied by the Church").

However, when she perceived the content of the text as mainly informational (e.g., Document 5) and less related to the question at hand, she referred to the document using the impersonal “it:” “Here *it* is just talking about the measurement itself, again.”

The effects of acknowledging the presence of the text’s author on adolescents’ reading of multiple historical texts have been explored by Paxton (2002). She found that providing students with an introductory passage clearly conveying the author’s voice fostered consideration of perspective during the reading of the subsequent texts, a step considered very important for thinking historically. On the other hand, without such prompt, students focused on the content of the text, a content now devoid of any context, and lost the possibility of understanding its meaning and evaluating its significance (Wineburg, 2007). The analysis of Danielle’s think-aloud makes me wonder whether these two processes are reciprocally influential, since, in this particular case, it seems that awareness of the author is prompted by clearly sensing that issues of bias or perspective may greatly affect the content of the text.

Danielle was a very careful reader. At the end of each document, she often took some time to go “back into the document, to see if there is any evidence” useful to address the question asked by the task, and “if that particular understanding fits with the question itself.” She noted that some conflict between science and religion was emerging from multiple documents, but her intertextual reading stopped here.

Once she finished reading all six texts, she suggested that, in order to answer the question, she would “probably make a chart, either/or, sphere or flat, and see how many documents support[ed] the answer; [...] or even make a T-chart,

science/religion.” In the end, she “would take more the scientific viewpoint than the theological viewpoint,” because she did not “really have a lot of evidence to support that the world is flat, the theological standpoint.” Overall, in building her answer, Danielle seemed to follow a sort of “majority rule,” espousing the view of the majority of the sources.

Danielle was not particularly satisfied with the kind of knowledge she was able to build on the basis of the documents and felt that she “would need to look into the theological problem, why they are going against what science is providing.” In particular, she believed that such lack of prior knowledge impeded her ability to evaluate whether some of the documents’ assertions were a consequence of bias. I found this approach consistent with the attitude of “digging deeper” manifested during the structured interview. The task completion clarified one of the consequences of the almost complete dependence of historical knowledge on the content of the available sources: specifically, the lack of corroboration across sources made it impossible to determine the trustworthiness of specific documents whenever the author was not previously known and brought to a halt the process of knowledge construction.

Comparisons across Teachers

In this section, I take a broader view and revisit the results described in the prior pages to highlight differences and similarities across these three teachers. My purpose here is to offer a synthetic summary of the results (so that the trees shall not impede the view of the forest) and to prepare for the last step of analysis, which will compare students’ and teachers’ findings. I organize the comparisons following the

same order in which I reported the results for each teacher. Table 4.1 summarizes key results.

Goals. While several goals were shared across all the three teachers, here I focus on what goals each one of them brought to the forefront and what goals tended to remain in the background. Ellen and Danielle underscored the willingness to foster a view of history as personally significant. Lauren focused especially on making history relevant for understanding the present. Danielle echoed Lauren's goal by highlighting the existence of cycles in history. Both Ellen and Lauren expressed the goal of making history "real" for their students.

In terms of differences, Lauren tended to focus on the substantive content of history, while Ellen and even more forcefully Danielle expressed the goal of teaching students to build historical arguments and of fostering an overall thoughtful approach to the discipline (which, in the case of Danielle, included accurate substantive knowledge). Introducing students to the use of primary sources was a goal shared by all teachers; however, it was mentioned as the first goal in order of importance only by Danielle. For Ellen and Lauren, introducing students to primary sources was mentioned last. All teachers justified their interest in the use of primary sources by referring to their potential of making history real and of facilitating learning. In a way, their goal in using them mainly to provide illustrations of or additions to the narrative provided by the textbook and presented during lectures.

Interest. All teachers reported to be frequent consumers of history related material (from scholarly history book, to historical novels, popular movies, and visits to museums and historical sites). Ellen and Lauren also perceived themselves as

Table 4.1

Teachers' Comparison Chart

	Ellen	Lauren	Danielle
Goals	History as: Personally significant Real Learning history as: Developing higher order thinking Acquire a structured substantive knowledge	History as: Relevant for the present Made up of details contained in sources Learning history as: Knowing what actually happened Acquire a basic narrative	History as: Personally significant Cyclical Learning history as: Making connections across time and with personal experience
Goals in using primary sources	Illustrate topics Adding the story of marginalized groups Foster empathy	Provide proof for the narrative Illustrate topics	Generate interest Experience living history
Interest in history (activities most often practiced)	Search for primary sources, historical inquiry, serve as historical resource, documentaries, popular movies, scholarly history books, historical novels, museums, construct curriculum.	Museums, scholarly history books, historical novels, historical documentaries, historical inquiry, write history-related papers	Museums, scholarly history books, historical novels, popular movies, construct curriculum
Pedagogical practices	Thoughtful recitation Repetition and organization of information Construction of narratives Group work	Lectures Recitation Textbook reading Documentaries watching Repetition and organization of information Mock narratives (re)creating historical context	Grounded lectures Structuring of information Connections with historical sources and personal experience Movies and documentaries Memory games Repetition of factual information Jigsaw

Epistemic beliefs	Sources convey the truth about the past History is written by specific points of view	Interpretation is part of history but its role is unclear Facts can be separated from opinions	Aware of the knower Aware of several heuristics The truth about the past seems in the sources
Historical thinking	Sourcing Corroboration Prior knowledge is considered but suspended Testing of provisional narratives	Texts are taken mostly at face value Context is deduced from unquestioned prior knowledge Majority rule	Partial awareness of text's authors Majority rule Appeal to further research

often engaged in historical inquiry and stated that they often looked for primary source material. Danielle reported a moderate level of engagement with this kind of activities.

Table 4.2 reports teachers' average scores on the interest measure in terms of their participation in activities that suggests a general interest in history (e.g., watch a historical documentary and read a historical novel) and a professional engagement in the history-domain (e.g., read a scholarly history book and engage in historical inquiry). While differences in the absolute average scores may depend on what "often" meant for each of these teachers, differences in the relation between participation in activities signaling general vs. professional interest may be an indication of expertise. While all teachers reported to be more involved in activities signaling a general interest in history than in activities that could be considered a mark of expertise, the gap between the two scores was much greater in the case of Danielle. Further, while Lauren's participation in professional activities was mainly related to her work on a master in history, Ellen's involvement in specific activities was a pure reflection of her personal choice.

Table 4.2

Teachers' Average Scores for General (G.I.) and Professional (P.I.) Interest in History

Name	Average G.I. (max. 10)	Average P.I. (max. 10)	Difference between averages (G.I. – P.I.)
Ellen	7.5	6.86	0.64
Lauren	5.67	5.43	0.24
Danielle	5.33	3.43	1.90

I found it particularly interesting that only Ellen perceived herself to serve as a historical authority or resource, and thus probably conceptualized her role as teacher in this way. Both Lauren and Danielle probably interpreted this item as referring only to professional historians.

General pedagogy. Participant teachers differed markedly in the kind of relationships and classroom climate they strove to establish. On one hand, Ellen tended to be authoritative and friendly, fostered and valued collaborations among the students, was willing to bend the curriculum if it served her students' learning, and was comfortable in sharing her views and accepting different perspectives. On the other hand, Lauren strove to foster her student responsibility for learning by enforcing routines, rules, and a system of rewards based on points and grades. In her teaching, she felt the need to remain within the boundaries of what she perceived as politically correct, but was uncomfortable with this position.

Danielle focused on creating rich learning experiences for her students, sharing and trying to foster a genuine interest for the discipline. Although clear and steady in her expectations, she let students make their choices in terms of the degree of involvement they wanted to maintain in class. All three teachers experienced some degree of frustration, which increased during the semester and was exacerbated by the tension of "keeping up" with the pacing guide, a constraint that became especially pressing with the upcoming of the final exams.

Lectures. All participant teachers used lectures to convey a narrative organized around broad topics (e.g., progressive reforms; imperialism); their notes highlighted relations of cause and effects between key concepts and events and

provided a structure for organizing the content of textbook's chapters or units. Ellen and Lauren tended to follow more closely the textbook, with Lauren adding further details and Ellen focusing on logical links between central concepts. Danielle introduced several primary and secondary sources and built her narrative around them; students were responsible for reading the textbook, but the lectures were built more freely around its topics.

Tasks. Most tasks used in Ellen's and Lauren's classes served the main purpose to organize, repeat, and elaborate ideas and factual information conveyed by the textbook or by additional readings. Ellen also designed tasks that prompted students to select evidence and built a story around it. Both teachers highlighted the importance of being mindful of the historical context: Ellen mainly aimed at fostering empathy; Lauren tended to underscore accuracy. Danielle designed several tasks aiming at deepening comprehension of texts, fostering reflection, and, similarly to Ellen and Lauren, reviewing factual information.

Use of primary and secondary sources. All participant teachers used primary sources for illustration purposes. In addition, Ellen introduced secondary-source alternatives to the textbook to foster reading comprehension; in this respect, Ellen used these additional sources just as texts. She often asked students to note the author and the nature of a source (primary or secondary), but these elements were not used for evaluating the source and thus building understanding.

Danielle used multiple sources to create the narrative that she conveyed mainly through lectures. In this sense, she used sources as additive or illustrative evidence. Students were also asked to complete several tasks that involved different

kind of sources. There were several attempts to use sourcing for evaluation purposes; however, the problem of bias seemed to remain unsolved and these additional sources were mainly used for gathering factual elements and ideas to add to the main narrative.

Epistemic beliefs. Table 4.3 reports the frequencies of the epistemic beliefs categories identified in the rubric (subcategories 1-6). Because teachers and students differed with respect to the total number of utterances for each interview, in order to aid comparisons, I transformed the frequency of each category into a percentage, calculated as a ratio between the frequency of that category and the total number of epistemic beliefs codes attributed to that specific participant.

All participant teachers demonstrated awareness of the interpretive nature of history. They differed, however, in the way in which they reconciled (or failed to reconcile) the subjective aspect of it with extant traces of the past. Ellen saw in the availability of evidence a limit to historian's subjectivity; at the same time, the idea that evidence tended to provide "two sides of the story" (why two?) seemed to push Ellen toward a subjective view of history. Thus, a higher number of utterances were coded as EBSUB. Lauren acknowledged the existence of multiple perspectives. Yet, she had a hard time in reconciling this state of affairs with her clear identification of a right and a wrong side in many issues. I suggest that her discomfort with instances of political correctness may have been related to the contradictions implied in this epistemic stance. In addition, she tended to view evidence as detached from argument, an idea that prompted me to code several of her statements as EBCO or TR1.

Table 4.3

Frequencies and Percentages of Utterances Expressing Different Categories of Teachers' Epistemic Beliefs*

Name	EBCO	TR1	EBSUB	TR2	EBCR	EB	Total
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq.
Ellen	1 (5%)	10 (50%)	6 (30%)	3 (15%)	-	-	20
Lauren	5 (23%)	9 (41%)	8 (36%)	-	-	-	22
Danielle	3 (16%)	5 (26%)	-	4 (21%)	7 (37%)	-	19

*Percentages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

argument, an idea that prompted me to code several of her statements as EBCO or TR1.

In discussing the nature of historians' accounts, Danielle demonstrated a rather consistent criterialist stance. In most of these cases, I coded her statements as TR2 or EBCR. Yet, in the context of building her own understanding of the past, the possibility of generating true knowledge about the past came to depend mainly on the sources at one's disposal, making the knower almost invisible. Thus, I coded her statements mostly as EBCO or TR1. The distribution of her statements across the different categories illustrates this split.

Historical thinking. Teachers differed considerably in their performance on the CRT task. Table 4.4 reports the frequencies of the historical thinking categories identified in the rubric (subcategories 7-11). Both Ellen and Danielle paid close attention to the authors and kind of documents. In the case of Ellen, these understandings came to bear on the interpretation of the texts, while Danielle used

them especially for identifying a common theme across the texts. Lauren did not seem to consider the authors of the documents nor the characteristics of these texts.

Both Lauren and Danielle tended to consider each text in isolation (with the exception of looking for a common theme, in the case of Danielle); probably as a result, Lauren intended to approach the question by working from a “majority rule.” Danielle mentioned the possibility of creating a T-chart and referred to the need of gathering further information about the issue. Only Ellen actually corroborated across documents, checking them one against the other and using her gained understandings to revisit prior interpretations. She also considered the historical context while, at the same time, she remained open to review her prior knowledge of the period and of the issue examined.

Table 4.4

Frequencies and Percentages of Utterances Expressing Features of Teachers' Historical Thinking*

Name	HTYes Freq. (%)	HTNo Freq. (%)	CP Freq. (%)	AQ Freq. (%)	AA Freq. (%)	Total Freq.
Ellen	7 (64%)	-	1 (9%)	-	3 (27%)	11
Lauren	-	3 (30%)	2 (20%)	5 (50%)	-	10
Danielle	5 (31%)	1 (6%)	1 (6%)	5 (31%)	4 (25%)	16

*Percentages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

The Students

Epistemic Beliefs of Students in History

Evidence for these data comes from analyses of structured interviews collected while student informants responded to the BHQ statements and justified their degree of agreement or disagreement with the items. While teachers completed the BHQ only once, students responded to the questionnaire twice. In reporting the results, I will first describe the characteristics of students' beliefs, irrespectively of whether they manifested themselves during the first or second administration of the BHQ, and then focus on changes observed within each student. I believe that, in this way, the description of the beliefs gains in richness and eventual developmental trends may appear more clearly.

General findings. Before describing the characteristics of beliefs emerged, I want to note a few general features that I believe may be important for their pedagogical implications. In particular, they regard the interest of students in discussing epistemological issues, the accessibility of student beliefs, and their malleability.

Specifically, I found that students were interested in discussing epistemological statements and able to justify their beliefs. Although there were a few instances in which students manifested their difficulties in pondering the statements, there was no indication that they considered the effort useless or boring. While I do not mean to discount the possible influence of being pulled out of the class routine and benefit of one-to-one attention, I still found remarkable the overall high level of engagement with the statements. When students answered the BHQ in

writing, the low number of responses left blank (about 1%) also confirms their willingness to engage these statements.

In addition, there were cases in which students showed surprise or puzzlement at the emergence of these beliefs in themselves. For example, at the end of the interview, when asked whether she found the questions difficult, Kate said: “Yes, it is hard to think about what you want to say, like how you want to explain it, but just if they give you a minute to process, then you are wow, this is how I think.” Instances like these suggest that epistemic beliefs may be quite easily prompted, although students may be rarely reflective about them.

Finally, there were instances in which the students engaged in a revision of their beliefs on the basis of the discussion of the statements in the questionnaire. Analyses of their responses suggested that it is probably relatively easy to challenge the idea that history is a collection of certain facts. Yet, what happens afterwards is much more complex, indicating that radical and sudden epistemic restructuring is not a likely event.

An example was provided by Juliet’s second interview. While responding to the statement “Students who read many history books learn that the past is what the historian makes it to be,” she asked whether the historian has “to be there” in order to write history. Once told this was not the case, Juliet often interjected this new idea (the “historian thing,” as she named it) while discussing the statements that followed. For example, while reacting to the statement “Students need to be aware that history is essentially a matter of interpretation” she said: “I somewhat agree with that, oh no, I disagree with that because it’s facts but then, again, somewhat disagree, because it’s

facts but we get our facts from people who weren't there so they have to interpret what happened." And she concluded: "My answers have definitely changed since last time."

Juliet demonstrated awareness of the change she was undergoing. She was able to describe her previous stance as being "pretty settled on that it's facts, and you can't change facts, and get all your information from facts," and to compare it with her current realization that "it's not really that what we learn is all based on facts; it is based on what the historians were, like their investigations, and using the historical method." Although this last statement may suggest a move toward a criterialist stance, the rest of the interview showed otherwise. Aware that the historian was not necessarily an eyewitness, Juliet moved to the idea that the historian was an investigator. However, lacking familiarity with the historical method, Juliet's investigator was unable to interrogate the sources and this condition generated the idea that history was hopelessly subjective.

Commenting on the statement "Even eyewitnesses do not always agree with each other, so there is no way to know what happened," Juliet said: "I agree with this, because eyewitnesses, like a car accident, this person said that this person ran into him but he ran into her so no one really knows, because everyone has their own opinion, everyone sees things differently." However, as the rest of Juliet's response illustrates, this sense of uncertainty still coexisted with the idea that the historian is a chronicler and that textbooks tell what happened: "[t]here really isn't any way to know today like 100% what happened in the Greek times, because I don't really

know much about it, but none of us was there unless there was a textbook in the Greek ages of what happened, but I don't think it did.”

Specific epistemic beliefs emerged from analyses of structured interviews.

Table 4.5 reports the frequencies of the epistemic beliefs categories identified in the rubric (subcategories 1-6). As I did with teachers, in order to aid comparisons, I transformed the frequency of each category into a percentage, calculated as a ratio between the frequency of that category and the total number of epistemic beliefs codes attributed to that specific participant. I based the calculation of the averages for each class and for the entire sample on these percentages.

The table shows that, across the two administrations, I coded most of the students' utterances as Copier (48% and 34%, respectively) and Transition 1 (26% and 27%, respectively). Few utterances, contributed in large measure by just one student, Mark were coded as Criterialist (5% and 3%, respectively); the Subjectivist category moderately increased across the two administration (7% and 11%, respectively), utterances coded as Transition 2 increased from 7% to 22% in the second administration, and a few student utterances offered epistemic ideas that could not be described by the categories I created (6% and 4%, respectively). For the most part, these general patterns remained consistent across classes, as well, although some differences could also be noted, especially in respect to changes across the two administrations. I will examine more closely these occurrences in the section reporting about change in epistemic beliefs. In what follows, I describe the categories of epistemic beliefs that emerged, providing illustrations from the students' structured interviews.

Table 4.5

Frequencies, Percentages, and Averages* of Utterances Expressing Different Categories of Student Epistemic Beliefs*

Name	EBCO	TR1	EBSUB	TR2	EBCR	EB	Total
	Freq. (%)	Freq.(%)	Freq.(%)	Freq.(%)	Freq.(%)	Freq.(%)	Freq.
Class 1.1	54%	19%	6%	8%	2%	11%	
Class 1.2	51%	21%	8%	14%	4%	4%	
Kalyna.1	4 (29%)	-	-	3 (21%)	1 (7%)	6 (43%)	14
Kalyna.2	14 (61%)	1 (4%)	-	2 (9%)	2 (9%)	4 (17%)	23
Jane.1	7 (100%)	-	-	-	-	-	7
Jane.2	8 (67%)	3 (25%)	1 (8%)	-	-	-	12
Eric.1	7 (41%)	7 (41%)	1 (6%)	2 (12%)	-	-	17
Eric.2	4 (18%)	4 (18%)	3 (14%)	10(45%)	1 (5%)	-	22
Rick.1	5 (45%)	4 (36%)	2 (18%)	-	-	-	11
Rick.2	11 (58%)	7 (37%)	1 (5%)	-	-	-	19
Class 2.1	54%	37%	8%	-	-	2%	
Class 2.2	25%	27%	14%	33%	2%	-	
Kate.1	10 (42%)	8 (33%)	6 (25%)	-	-	-	24
Kate.2	1 (5%)	6 (27%)	9 (41%)	6 (27%)	-	-	22
Monica.1	5 (31%)	10(63%)	1 (6%)	-	-	-	16
Monica.2	5 (31%)	3 (19%)	-	7 (44%)	1 (6%)	-	16
Chris.1	10 (59%)	6 (35%)	-	-	-	1 (6%)	17
Chris.2	2 (8%)	4 (15%)	4 (15%)	16(62%)	-	-	26
Juliet.1	5 (83%)	1 (17%)	-	-	-	-	6
Juliet.2	21 (54%)	18(46%)	-	-	-	-	39
Class 3.1	38%	22%	6%	13%	15%	7%	
Class 3.2	28%	34%	12%	18%	3%	7%	
Elizabeth.1	8 (53%)	6 (40%)	1 (7%)	-	-	-	15
Elizabeth.2	21 (70%)	9 (30%)	-	-	-	-	30
Jack.1	9 (50%)	4 (22%)	1 (6%)	4 (22%)	-	-	18
Jack.2	1 (5%)	5 (26%)	5 (26%)	8 (42%)	-	-	19
Ashley.1	9 (47%)	4 (21%)	1 (5%)	5 (26%)	-	-	19
Ashley.2	5 (25%)	11(55%)	3 (15%)	1 (5%)	-	-	20
Mark.1	-	1 (5%)	1 (5%)	1 (5%)	11(58%)	5 (26%)	19
Mark.2	2 (11%)	5 (26%)	1 (5%)	5 (26%)	2 (11%)	5 (26%)	19
Averages.1	48%	26%	7%	7%	5%	6%	
Averages.2	34%	27%	11%	22%	3%	4%	

Note. When used after a name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

Copier (EBCO). In this category, I gathered utterances compatible with a view of knowing in which there is no overall awareness of the role of the knower and evidence is thus conceived as detached from argument. Similar ideas were also reported by Lee (2004), who found that some students tended to explain differences among historical accounts as a result of the impossibility of “being there” (in the past) or as a consequence of accessing different remnants of the past. Again, similarly to what I found in this study, some students were conceiving evidence as granting immediate access to the past and blamed eventual problems on the incorrectness of the “information” (Lee & Shemilt, 2003).

Two main ideas consistently tended to characterize this stance across the data. The first one can be described as the belief that history coincides with the past, and, in particular, it is seen as the series of events that happened in the past. The second regards the role of historians, conceived as chroniclers or serendipitous finders.

The first idea was sometimes signaled by utterances in which the words “history” and “past” were used interchangeably, as illustrated in some of the following examples: “[H]istory to me is things that happened in history, you learn about it, it’s not like someone’s interpretation of a situation, it’s like facts that actually happened” (Juliet); “[H]istory is about the past, the events that happened in the past, not really anything else” (Jack); “[Y]ou may have your own interpretation of it but it [history] doesn’t change. History is already done and it is never going to change” (Ashley).

As such, history came to be determined by its remnants (e.g., documents, artifacts, and bones), as this quote by Elizabeth epitomized: “[T]he past is what the evidence makes it to be, what evidence you collect; it’s not the historian. Historians can say anything about the past and it can be wrong, but the evidence says what happened in the past.”

Several students echoed this idea, sharpening the description of this belief and making explicit some of its possible justifications. Chris, for example, said that “the past wrote the history down,” because “after a war, someone would just write about it.” Similarly, Monica affirmed that “there are certain things in the past that we know that happened just based on writings and things like that.” These remnants of the past can “tell what really happened.” Monica admitted that sometimes it may be difficult to reach certainty about “what happened,” especially when the object of the search is “way back.” However, also in these cases, she was quick to conclude that one can “kind of know, based on fossils.”

Several students referred to fossils in their responses, especially dinosaurs’ bones and Egyptians mummies or artifacts, but also videos and photographs in regard to the more recent past. Jane, for example, recalled that “the Egyptians [...] wrote stuff on rocks [...] and this is how they found out that Egyptians were there and stuff.” Similarly, Kalyna referred to the mummy of an Egyptian’s empress; and Rick liked the idea of history as inquiry “because it is always going back to history, and digging, and investigating, and see what really happened.” On the other hand, similarly to Monica, Juliet appreciated the difficulties in dealing with some traces of the past, such as cave paintings, and admitted that, in these cases, historians need to

“pick those apart” in order to find “the information for us.” However, she found that in other cases historians’ work is much easier, such as when they can “rely on the video” or “even as easy as [reading] from [a]diary.” Rick echoed Juliet’s comments by observing that “nowadays history can be made with videos and stuff.”

Technology was sometimes mentioned as a powerful ally in dealing with “difficult” remnants. For example, Ashley believed that it was possible to know about the past “because technology and things that we have are capable of knowing things.” When asked for an example, her response, again, regarded “bones, the dinosaurs stuff.” Thinking about the impact that technology may have on the future of history, Jack concluded that “in the future we will have evidence; we’ll have cameras and video cameras, and technology that can help us with evidence.” In mentioning videos and photographs, students did not seem aware of the fact that human eyes have peeped through the camera and decided its focus, falling easily prey of the referential illusion of these media (VanSledright, 2002). At the same time, they often struggled with the issue of trustworthiness and possible bias of eyewitnesses.

The second idea characterizing a copier stance regarded the role of historians, conceived as chroniclers or serendipitous finders and collectors of remnants of the past. Although students seemed to be aware that history had an author, the weight of generating knowledge remained heavily dependent upon its object, a result that echoed what Hynd and her colleagues found by interviewing college students (Hynd, Holschuh, & Hubbard, 2004). Quite often, students did not seem to differentiate too sharply between the work of historians and the task of archeologists, or likened the

historian to an investigator. These conceptualizations seemed to prevent students from understanding the interpretive role of historians and especially the importance of the question that the historian set out to investigate in guiding the historical research and in deciding what counts as evidence. Kalyna illustrated this issue quite clearly:

[T]here is always evidence in history and also the detective that tries to find this person who is guilty, [who] strongly believes that this person is guilty, he needs to research all the stuff, like files [...] so, that to show that the detectives and archeologists are both the same, search for evidence and never give up.

Kalyna used the word “evidence” and hinted at the role of argument, as her detective seemed to know what he was searching for. Yet, her attitude lacked the openness that should characterize historical inquiry. Moreover, the rest of the interview suggested that Kalyna conceived of evidence as providing in itself the final answer (or proof) about some event in the past. For example, she explained that “historians do not make history [...] [they] can just go and tell you how it goes.”

Very interesting in this respect was also the concept of “fact” that emerged in a few cases. Kate provided a clear definition: “Facts are facts and they tell you what happened and what didn’t happen; this is why they are called facts.” Most students acknowledged their unfamiliarity with the term “historical method,” and a few of them voiced skepticism about the existence of a historical method and the opportunity to use it in order to generate knowledge about the past. For example, according to Jack, the relation between the past and the account should be as transparent as possible; hence, he was suspicious of any method of inquiry because history “should

be what it is and method could skew the results.” Similarly, Elizabeth acknowledged that “science has a method, but history [...] just happens, so there is not really a method,” and Juliet echoed the same idea saying that “it’s not that history is like a method [...]; history is just what it is, what happened.”

However, a few students began to see some of these beliefs as problematic, albeit only in a few cases and without abandoning the overall epistemic assumptions characterizing a copier stance. For example, some realized that, in a few unfortunate cases, knowledge about the past may become impossible since “the people [who] wrote the records could have changed it or made it not true” (Rick). In other cases, they qualified their belief in the factual nature of knowledge by saying that facts speak for themselves only if they are true (Chris). Finally, when prompted to think about the relation between the past and historians, some students began to question the origin of historical knowledge. This quote from Kate illustrates this moment:

It makes you confused because you know that historians write the history books, they have to get the history from somewhere, so they have to get the information from somewhere to write about it, so you question where does their information come from so that they can write about it?

Transition 1 (TRI). Utterances comprised in this category voiced the desirability of a coincidence of history with the past. In other words, historians were viewed as “wannabe” chroniclers, thus sharing much of the copier stance. However, these utterances also demonstrated the belief that complete knowledge of the past is always, or at least very often, impossible because the interpretation of what we have left from the past is debatable, conflicting, or simply too little.

[T]here is evidence [in history] in the aspect of people knowing what happened, but there is no evidence because no one is going to say the same thing every time (Kate).

[Y]ou really don't know history; it's just through books and people writing down stuff and documents from back in the days; there could be something missing that nobody knows about, but [...] everybody has a different opinion about history and what they think happened (Ashley).

In all these cases, these participants saw history as a hopelessly subjective endeavor and it became just a matter of opinion, echoing several of the ideas characterizing a subjectivist stance. Jack, for example, said that “if there is lack of evidence, people will think something else. [...] If there is lack of evidence you can say pretty much anything [...] about what happened.” Similarly, Eric and Juliet said that “you can't really know if the history is 100% accurate, so, in a way it [the past] is what the historian makes it to be,” and “historians were not there, so they cannot really just say what they want to, but they can fabricate on it.” Rick saw the process even less grounded: “They are not really sure about what really happened until they guess about history, so that you can teach it.”

However, contrary to utterances coded as Subjectivist, these statements did not reflect the belief that historical knowledge was intrinsically subjective and, in general, students voicing these ideas regretted these occurrences. In particular, they tended to cast the difference between possible and impossible (or subjective) history as a dichotomy between objective facts and opinions that cannot be challenged: “There is evidence in history that shows what happened, but a lot of it is opinion by

historians and people” (Jack). In a few cases, however, participants indicated that out of a multiplicity of opinions (and sometimes because of it) the truth about the past could be reached (or, at least, one could make up one’s mind): “Anyone can have an idea, but one person can see evidence as one thing and another can see another one and then you just have to go against each other to find out the truth (Chris); “[H]istory itself is more of a boiling down of the different ways in which it was interpreted to find out the truth of what actually happened” (Mark).

In some cases, students seemed to realize the problems implied by the coexistence of the beliefs characterizing these utterances, but were not able to solve the contradiction. For example, in evaluating whether she believed that history was simply a matter of interpretation, Monica showed uncertainty: “I don’t know, some of it is interpretation, but a lot of it is facts, I don’t know” (Monica). Similarly, in considering the justifiability of historical claims, Jack said: “I somewhat disagree with this, because historical claims [silence] I somewhat agree with this because historical claims is pretty much interpretation by historians [silence] Ah, I don’t know.”

The fact/opinion dichotomy was found in prior studies by Lee and Ashby (2000). They warned that stressing this distinction without offering criteria to discriminate among different opinions could likely push adolescents toward an unwarranted skepticism or helpless indifference (p. 222). Yet, students did not always welcome the idea of being taught to deal with conflicting evidence. For example, during the second interview, I asked Elizabeth how she would discriminate between conflicting stories. The lack of effective criteria emerged, and she admitted

that “you don’t really know what happened and so one thing could really overpower the other and be completely wrong.” At the same time, she declared that she did not want to be taught to deal with conflicting evidence. This is the reason she provided: “because then you have to think and to be like ‘Oh, what is, which is right?’ And then you can make the mistake of being wrong and then you’ll be ‘Oh!’ and then you’ll tell everyone the wrong thing and change what really happened.” A preference for relying on the authority of the teacher, the textbook, or, more generically, the researchers seemed to be related to this kind of fear.

This refusal of epistemic responsibility seems to me a worrisome correlate of the idea that true knowledge can be obtained only when the knower is a passive receiver of ready-made evidence or of words from authorities. Reliance on authorities to resolve eventual conflicts emerged during interviews with other participants, too, although in these other cases students welcomed the possibility of learning how to face these situations themselves. The rationale usually provided was that “there’s historians that can probably tell you accurately what happened” (Chris) and that “it’s probably not rational to believe something and don’t have evidence for, or that a researcher researched for and come close to proving it” (Monica). A different rationale was provided by Mark who noted that not “all students are mature enough to handle that decision.”

In terms of justification of historical knowledge claims, I found that participants hardly distinguished between opinions and interpretations. One rare exception was offered by Jack who provided the following definitions:

“[I]nterpretation is taking all the facts, and putting together, and see what happened.

Opinion is what you think that happened, [...] but with no facts.” On the contrary, most students used the two words interchangeably, with an overall subjective undertone, suggesting that they were unable to evaluate the degree of justification of different opinions.

In a few cases, opinion took on a judgmental character (of specific events or people’s behaviors), and referred to the evaluation of historical occurrences in moral terms. When intended in this way, students did not think that opinion should withstand any justification. This quote from Ashley illustrates this issue: “[Y]ou can have your own opinion on it [history], but it is not a matter of opinion, it is [...] already done, but you can have your own opinion on it.” The difficulties that students demonstrated in dealing with the contradictions that a stark dichotomy between facts and opinions engender suggest that pedagogical interventions explicitly aiding the clarification of these concepts and thus the development of a more mature epistemic stance may be necessary to overcome this impasse.

Subjectivist (EBSUB). In this category, I grouped those utterances conveying the perception that the role of the knower in the process of knowing is predominant and for the most part unbound by any reference to something existing outside of him or her. In these cases, participants often voiced the idea that history depended on the views of those who write it and thus it became a matter of opinion. The issue of bias sometimes arose in this context: “History is basically what you make of it, depending on what you have got to know, what your background is, like Democratic, Republican, because [...] people see it differently depending on whether you are Republican or Democratic.” (Kate). Elizabeth extended this idea to historians: “It is

all about the historian's opinion, I guess, how they perceive history; so [...] everyone is going to have a different opinion about what happened, or should have happened, or why it happened." In a few cases, personal experience was used to support this subjective view: "Everyone is going to have his own opinion [on a fight] based on whether one of their friends is fighting another person" (Kate).

Whenever objective remnants of the past were mentioned, these participants generally discounted them, on the ground that their use became a matter of choice and interpretation was therefore at the mercy of the historian's personal opinions. Thus, for Eric, "everything is interpretation, because they [historians] recognize different opinions about things and different artifacts about everything." Although he acknowledged that "you got to have evidence about something," he also pointed out that "there are different opinions about a lot of things, like the one that one thought that it has the face of Jesus on it; it could be just painted on there, it could be faded away, you never know. It's like a thousand years old."

Similarly, Jack said that the historian writes "what he knows and he believes;" and "even if there is records, [he] can interpret them differently." Rick concluded that students should be aware that "history is just being created, it is just being made and interpreted." An exception to this trend, Elizabeth concluded that since "everyone is going to have a different opinion," one has "to just do it with evidence," ending up in a position that seems to resemble what I called TR1. However, when asked how she would address the conflict, Elizabeth referred to class discussions in which "everyone has his own opinion," but is asked to "listen to the others' opinion and take it in."

Thus, in contrast with beliefs categorized as TR1, in this case the evidence is someone else's opinion.

The result of this “taking in” without prior evaluation remains problematic, possibly ending up in internalizing unresolved conflict; an outcome quite likely if students do not have criteria to evaluate different points of view and mirroring the “Cut and Paste” approach emerged during the completion of the CRT task. Also in this case, some of the findings of this study echoed what reported in Lee's work (2004), where some students explained differences in accounts as an “author problem”, due to mistakes or differences in points of view.

Transition 2 (TR2). I did not find much evidence signaling a clear movement toward coordination between object and subject of knowledge, although the percentage of these statements increased during the second interview. The statements coded as TR2 acknowledged some interpretive work of the learner while usually adding that such interpretation was based on evidence. However, most of these statements also conserved some of the undertones characterizing a transition 1 stance, which means that the idea of historians as finders (albeit very active finders) seemed to be still in the background. Thus, for the most part, these statements conveyed the awareness that evidence needs interpretation, but they hardly suggested that students were also aware of the role played by the historian's question in the generation of historical knowledge.

Jack, for example, said that “the historian is interpreting the events that he finds out and things that he finds out of the past.” Jack's historian still resembles the serendipitous finder typical of the copier stance, since the role of the historian's

question or initial hypothesis about the past is still missing. However, in this case, the historian does not simply collect the findings, but he interprets them.

Mark and Eric offered further examples of the beliefs characterizing this stance. Mark clearly identified that, in interpreting the evidence, historians shape and color the historical event and Eric underscored the effort and the active engagement of learners in order to develop justified beliefs about the past.

I think that in history there is certain truth to what happened and different people, historical accounts of a given event have tendency to color and change and make the event appear differently to others (Mark).

There is some evidence on something, so they [students] can't just choose [to believe any story]; they have to actually research the evidence, what other theories are out there [...]; and there are ways of knowing, it just takes a while (Eric).

The statements coded as TR2 often indicated that the method to build historical knowledge remained fundamentally unclear and, when mentioned at all, it was conceptualized as mainly deterministic. Jack, for example, acknowledged that, although eyewitnesses may disagree, historians “can still piece together something that happened, based on the evidence [...] and see what a reasonable story [it] would be.” Although the method to build this “reasonable story” remained unclear, Jack seemed to have in mind something resembling the “Cut and Paste” approach, when he said that one should “pretty much combine” the testimonies of different eyewitnesses. He also saw in its use a possibility to overcome disagreement among historians, since

sharing a common method might prompt historians to “come up with the same information.”

Chris echoed a similar belief, when he saw in the historical method (“if there is one”) a way of avoiding “wrong decisions” in interpreting the remnants of the past. Similarly, other students acknowledged “a way to know what happened,” since, though eyewitnesses may disagree, it is possible to identify some common ground. Again, how one can accomplish such result was not clear. Although students mentioned searching for evidence, finding information, using conflicting evidence, and considering multiple perspectives, how to find, choose, and use this “evidence” was not explained, leaving the features of a possible method fundamentally blurry. When pushed to explain how they would decide between conflicting stories, several students mentioned the textbook, teacher’s explanations, their prior knowledge, preponderance of evidence, and “what makes sense.”

The idea of justifications of historical knowledge also began to emerge in a few cases. Chris, for example, distinguished between history and the past while acknowledging that accounts can differ on the basis of the justifications that they produce: “[I]f you just write about something you cannot actually change the past, what happened back then happened back then; it’s how you justify it now.” Several of the utterances coded as TR2 also referred to the need of grounding one’s opinions/interpretations in evidence and, in these cases, students usually also thought that teachers should question students not only about their factual knowledge but also about their historical opinions.

Criterionlist (EBCR). Statements suggesting a clear acknowledgment that the interpretive role of the historian relied on specific disciplinary criteria and heuristics were rare. Beside Mark, only few students mentioned specific criteria for generating historical knowledge. They usually did that when prompted by the BHQ's statements to consider the role played in learning history by the process of comparing sources and understanding author perspective. Kalyna, for example, mentioned that "you need sources, different ones, and then understand the person who wrote them, to understand." She also hinted at subtext, saying that "when you read something [...] that was written by some of the historians, you need to understand and read between the lines to understand what he is saying and to understand what he or she is trying to do." Eric made a similar remark, referring to the need of understanding author's viewpoints in order to be able to learn from the accounts. Finally, Kalyna implied the need for contextualization, by observing that one's knowledge of the historical period can aid the interpretation of conflicting evidence.

Mark was much more articulated and consistent in his beliefs. He clearly differentiated between the past and history; within history, he believed there was "a certain amount of truth that is set in stone, like the events that happened," a truth that would stand "whatever point of view you have of an event," "no matter where you come from." However, the way "to come upon this truth" required "reading and learning from different interpretations." Mark reiterated the key role played by interpretation several times during the first interview. For example, he attributed disagreement about past events more to a "lack of understanding of different perspectives" than to lack of evidence and noted that "facts may speak for

themselves, but they don't think for themselves." Since students may find it difficult "to understand history simply from facts," school should help them "to synthesize [...] the complex ideas that need to be learned to understand history."

Mark also demonstrated having developed several criteria to accomplish the work of interpretation; unique in this respect, these criteria enabled him to differentiate clearly between opinion and interpretation: "[H]istory is not necessarily basically a matter of opinion; I believe it's a matter more of interpretation and gathering from different sources." When asked to elaborate on what "skills" students should have in order to learn history well, he volunteered "the ability to gather information, the difference between fact and fiction, based on the credibility of evidence."

While several students were helpless in confronting conflicting sources, Mark observed that "conflicting evidence [...] usually leads to the most reasonable account and more accurate account, because it presents more than one point of view of an event or an idea. It helps just diminish the bias of a certain event." He also added that, although first-hand accounts "obviously include bias from people," "biased or not, it is still evidence." However, there was a kind of bias that Mark considered truly undesirable; it regarded the inability of historians to look beyond their perceptions and cultural sensitivities. In commenting upon the statement "History is a critical inquiry about the past," Mark agreed, adding that "maybe a better definition would be 'History is an unbiased, critical inquiry about the past.'" When asked to elaborate about what he meant by "unbiased" in this context, he made the example of someone grown up "around racists, racism, and aryanism, and all those beliefs" who

sincerely believed that there was nothing wrong with slavery. In this case, Mark observed that “their critical inquiry about the past” would probably suffer from inaccuracies, “it wouldn’t be the whole truth and nothing but the truth, it would be part of the truth based upon their perceptions and their [...] cultural sensitivities.”

Changes in Students’ Epistemic Beliefs

In comparing students’ answers to individual BHQ’s statements across the two administrations, I noted that, whenever the epistemic idea expressed as a response to a specific item did not change, students tended to provide the same kind of justification for their level of agreement or disagreement, sometimes using quite similar words. For example, Rick related the need of interpretation in history to the lack of knowledge in both administrations: “[T]hey are not really sure about what really happened until they guess about history, so that you can teach it” (First administration); “[T]hey are not sure, so they interpret what they think happened a long time ago” (Second administration).

Kate, on the other hand, continued to relate interpretation to perspective: “[H]istory is like depending on how you are growing up, I guess, and what you experienced yourself in history, or what you have heard though past generations about history” (First administration); “[T]he way you see it is based on someone else and if you grew up like in a rural society compared to like a rich, if you are poor, at the middle, or rich, your eyes are going to see history different” (Second administration).

Similarly, students who introduced new understandings about the nature of history seemed to leave prior, conflicting ideas unchallenged. Juliet's responses to the statement "History is simply a matter of interpretation" illustrate this occurrence:

First administration: *[H]istory is not interpretation, history to me is things that happened in history, you learn about it, it's not like someone's interpretation of a situation, it's like facts that actually happened.*

Second administration: *[H]istory is not interpretation, is facts [inaudible] like things happened and how it happened, then I guess it gets twisted; actually I disagree, because we have to go I guess with what the people back then said, so I think that it should be mainly based on what happened and not interpretation of what happened.*

During the second interview, Juliet briefly introduced the idea that history may "get twisted." Yet, still failing to attribute any positive role to the knower, she continued to cling to the idea of history as series of events, now depending on eyewitness accounts.

These examples suggest that interventions aiming at fostering epistemic change need to address these prior ideas and provide convincing alternative ways of thinking about the issues that students perceive as problematic (an approach in line with findings from the conceptual change literature). Failure to do so might likely result in students espousing conflicting ideas, an occurrence that I found reflected in several utterances coded as TR1.

General trends. Table 4.6 summarizes changes in epistemic beliefs across administrations and classes. Overall, participants became more aware of the presence

of the knower in the generation of historical knowledge and, in the aggregate, a higher percentage of student utterances demonstrated awareness of the existence of criteria that can aid such process. Copier and transition 1 utterances continued to comprise most student utterances across the two administrations, although the share of utterances coded as Subjectivist and Transition 2 increased during the second interview. Thus, considered in the aggregate, it is tempting to “exchange” the decrease in copier utterances (-14%) with the almost equal increase in transition 2 utterances (+15%). However, an examination of what happened at the class and at the individual level suggests a more complex picture.

Table 4.6

Percentages and Averages* of Utterances Expressing Different Categories of Student Epistemic Beliefs by Class*

Class/ Administration	EBCO	TR1	EBSUB	TR2	EBCR	EB
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Class 1.1	54%	19%	6%	8%	2%	11%
Class 1.2	51%	21%	8%	14%	4%	4%
Class 2.1	54%	37%	8%	-	-	2%
Class 2.2	25%	27%	14%	33%	2%	-
Class 3.1	38%	22%	6%	13%	15%	7%
Class 3.2	28%	34%	12%	18%	3%	7%
Averages.1	48%	26%	7%	7%	5%	6%
Averages.2	34%	27%	11%	22%	3%	4%

Note. When used after a class' name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

Class and individual trends. Although all classes moved in the direction of an increased awareness of the presence of the knower, the patterns of change differed. Because participants within each class also differed, I discuss class and individual trends together.

Class 1. Looking at Table 4.6, it would be easy to conclude that the freshmen class manifested the least change. However, the aggregated pattern may be deceiving, as an examination of the trends by students summarized in Table 4.7 illustrates. In fact, while Jane and Rick actually demonstrated moderate change across the interviews (as evidenced by a holistic comparison of their responses on the whole BHQ), Eric and Kalyna voiced a number of different ideas during the two

Table 4.7

Class 1: Percentages and Averages* of utterances expressing Different Categories of Student Epistemic Beliefs*

Name	EBCO	TR1	EBSUB	TR2	EBCR	EB
Kalyna.1	29%	-	-	21%	7%	43%
Kalyna.2	61%	4%	-	9%	9%	17%
Jane.1	100%	-	-	-	-	-
Jane.2	67%	25%	8%	-	-	-
Eric.1	41%	41%	6%	12%	-	-
Eric.2	18%	18%	14%	45%	5%	-
Rick.1	45%	36%	18%	-	-	-
Rick.2	58%	37%	5%	-	-	-
Average.1	54%	19%	6%	8%	2%	11%
Average.2	51%	21%	8%	14%	4%	4%

Note. When used after a name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

interviews. However, since their direction of change went in somewhat opposite directions, their movements tended to cancel each other out once aggregated at the class level. In what follows, I summarize the results in terms of change for each student.

Jane. I must note, first, that the number of Jane's utterances that I could not code using the Epistemic Beliefs rubric was much higher than in the case of the other students. Especially during the first interview, Jane often failed at understanding the statements and thus her comments did not address the issues posed. This occurrence suggests that a threshold of literacy needs to be reached in order to enable individuals to discuss their epistemic beliefs. The comments she provided to statements she understood referred to beliefs typical of the copier stance. Overall, she portrayed the historians as people who "[m]aybe [...] were not there, but they have like stuff to show that...like, they have stuff saying that, like...they have facts about them, they found stuff when they went there." Thus, she remained convinced that we can know about the past "because people did live there, and then they, people, have studied it and stuff, so they know how it happened, and that's how it was, and we are sure."

She never alluded to argument. When opinions were mentioned, Jane put them in opposition to facts and characterized them as beliefs that do not have to reckon with evidence, as this quote illustrates: "[P]eople have different opinions about, like things, and teachers cannot be like 'oh, well, you have to believe what I am saying.' You can tell us the facts and stuff, but if we believe that something else happened, then we can believe that." The only relevant change occurred regarding the mention of evidence during the second interview. However, being aware of the limits

of her knowledge, Jane often expressed the advantage of relying on authorities, such as teachers and experts, “because if people that, doing their job, study for that [the past] and they are saying that ‘This is what happened,’ then everyone is going to believe ‘This is what happened,’ actually and stuff, they are not gonna argue or research about it, because they do have all the evidence, not evidence, but all the ideas, main ideas about...”.

Rick. In the first interview, Rick had several difficulties in understanding the BHQ statements, too. As a result, his responses to the prompts were sometimes requests of clarification or he limited himself to state his agreement and disagreement while offering as justification a restatement of the item. For this reason, I attributed no code to several of Rick’s utterances during the first structured interview. His understanding of the statements seemed to improve during the second interview; he appeared more comfortable with the language used, and I was able to code most of his utterances according to the rubric.

Overall, I coded most of Rick’s statements as Copier. He often referred to evidence as the basis for history and acknowledged that differences of opinions may emerge when the evidence is lacking or unclear (or when eyewitnesses lie). However, he never acknowledged the role of argument and he interpreted the historical method as knowing “about history and what happened.”

A slight change regarded a move from characterizing historians as those who “have evidence and that’s why it’s true,” to expressing, in the second interview, the idea that “because they [the historians] are not sure, they interpret what they think happened long time ago.” The concept of interpretation seemed, however, very weak

and juxtaposed to the truthfulness of historical accounts, as Rick's comments about the justifiability of historical claims during the second interview illustrates: "[T]hey are the historians, and so it's true, it's right, it's not that they are interpreting in history. [...] They have some evidence, they found some evidence."

Kalyna. Kalyna's shift was in counter tendency in respect to other students, because, in her case, the move was toward assigning a greater role to the object in the generation of knowledge. Specifically, in her first interview, Kalyna often addressed the role (and preponderance) of beliefs saying that "there is a lot of stuff that just is not supported by evidence. So, if you strongly believe in it, there is, it happened such thing."

Disagreement with a teacher back in Ukraine about the evaluation of a controversial historical character might have prompted Kalyna's overall attitude, in this respect. She recounted this event at length in her second interview and how she had spent time in the library and at a museum with her grandpa searching for evidence that vindicated who they perceived as a hero while the teacher depicted as a rogue. Although she remained very sensitive to the role that beliefs may play in one's life, in the second interview the need to "prove" the correctness of one's beliefs also emerged several times.

[Y]ou shouldn't give up search, as my grandpa here, he never gave up and on the first day we didn't find anything and then the next we found a lot of things that proved that that person was good, because that day I was just ready to give up and said: "Grandpa, my history teacher is probably right, because she has [...] a lot of education about history, and she knows what really

happened.” And he said: “Don’t let anyone fool yourself, they are just playing on you, or they just don’t know and so you shouldn’t give up on things; and then you prove things.”

In so doing, however, Kalyna tended also to shift from considering evidence in relation to a belief to be proven to something existing independently from a knower. The different response to the statement “The facts speak for themselves” provided a clear illustration of this shift. During the first interview, Kalyna said that she “would not really agree with that, because there is always a person that speaks for the facts and agree with those facts or disagree with those facts and say his or her opinion.” However, her response changed during the second interview: “I would agree with this, because those facts, if you find this picture or documents and you understood everything, then the fact speaks basically for itself.”

In the second interview, she also downplayed the differences in historical accounts, “because a lot of people think the same,” or at least conflict is circumscribed to few instances. She was also confident to be able to deal with conflicting evidence because “if one evidence is right, then one evidence is wrong,” or at least “it is kind of combining those. They might both be true.” Although she was not naïve, and mentioned the need to pay attention to the subtext of historical accounts, in the second interview Kalyna embraced more decidedly a view of historian as detective and archeologist who “search for evidence and never give up.”

Eric. He went from mainly stressing the role of ‘evidence’ in building historical knowledge to acknowledging some degree of interplay between evidence and interpretation. Specifically, in the first interview, Eric tended to confine the need

for interpretation to those cases in which evidence was lacking. In the second interview, he noted that people may disagree about the same event in the past because “they go down different paths.” However, the relation between evidence and argument and the criteria of justifications remained overall blurry. Eric acknowledged that history is “an opinion based on facts [...] and things like that, so it is kind of an opinion and it is kind of evidence, too, so it is a mix of both;” at the same time, acknowledgment of the role of argument was not consistent and the goal of history as generically letting people “know what happened” still emerged during the second interview.

Class 2. Participants belonging to this junior class offered a consistent pattern of change, acknowledging more frequently the role of the knower and the existence of criteria of justifications (albeit still undefined). With the exception of Juliet, this group of participants showed several relevant changes in the ideas expressed during the two interviews. Table 4.8 summarizes data relevant to the students in this class.

Juliet. I described Juliet’s evidence of change in the section titled “General Finding” (pp. 209-210). Juliet realized the “historian thing,” as she named it, becoming aware that historians were not usually eyewitnesses of the events they described. After this discovery, she faced the problems opened up by this new understanding by developing the idea that historians needed to fill in what they could not find and that they had to research harder. The role played by the historian’s question and argument remained absent from both interviews; thus, the role of the subject in the generation of historical knowledge remained minimal.

Kate. In both interviews, Kate’s percentage of utterances coded as Subjectivist was the highest. During the second interview, her concept of perspective seemed to become richer, moving beyond people’s political preferences to include “stories they

Table 4.8

Class 2: Percentages and Averages* of utterances expressing Different Categories of Student Epistemic Beliefs*

Name	EBCO	TR1	EBSUB	TR2	EBCR	EB
Kate.1	42%	33%	25%	-	-	-
Kate.2	5%	27%	41%	27%	-	-
Monica.1	31%	63%	6%	-	-	-
Monica.2	31%	19%	-	44%	6%	-
Chris.1	59%	35%	-	-	-	6%
Chris.2	8%	15%	15%	62%	-	-
Juliet.1	83%	17%	-	-	-	-
Juliet.2	54%	46%	-	-	-	-
Average.1	54%	37%	8%	-	-	2%
Average.2	25%	27%	14%	33%	2%	-

Note. When used after a name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

heard, books they read, things they may know.” Also her concept of “facts” acquired complexity and facts, instead of just “telling you what happened and what didn’t happen,” came to acquire their meaning from the “whole scenario.”

At the same time, Kate became wearier of eyewitnesses and thus her overall uncertainty increased. For example, in the first interview, Kate said that one can know about the past because “if someone from the past was there when things happened, tells someone else, there’s going to be a story and so more and more

people would know it, [...] then it just keeps going, that's why there are so many different like persons, aspects of it." In the second interview, lacking a criteria to discriminate among eyewitnesses and having realized that stories might not reflect truthfully what happened because people may make "themselves look bad," she became less certain about the possibility of knowing about the past because "those stories could be made up, to make it sounds more interesting or not." Uncertainty became impossibility of knowing in case of conflicting evidence: "If you have conflicting evidence, [...] unless you really know, unless you are also there and you know what happened, like as a third party, then how can you make a clear justification for what really happened?"

Monica. Contrary to Kate, Monica strongly resisted the idea of history as subjective in both interviews. In the first interview, Monica's utterances often reflected beliefs typical of Transition 1. She perceived that both facts and interpretation played a role in history, but she remained unable to reconcile these views: "I don't know, I guess, I don't know, some of it is interpretation, but a lot of it is facts." In the second interview, her justifications included the role of historians' arguments and hinted at their difference with opinions: "historians [...] have arguments in their writing and not just opinions." However, the idea of indisputable facts still remained: "I guess people can interpret facts, but I say: 'Something happened,' and it happened, there's evidence about it."

In the second interview, Monica's description of sourcing became richer, although its utility remained still linked to determining issues of bias: "[W]hen you read a primary source document it is good to know when it was written, who was it

written by, and the author, their bias when they wrote, and that's a good way of understanding what happened." Similarly, the lack of criteria for building historical accounts and the idea of evidence as detached from argument surfaced when I asked Monica how she would deal with conflicting evidence: "I guess based on your knowledge and your own opinion, you can create your own conclusions, even if, I guess, it's harder if the documents have conflicting evidence to come to your conclusions."

Chris. Chris provided perhaps the clearest example of consistent epistemic change and of some of the issues that need to be faced once the perception of the role of the knower in the generation of historical knowledge becomes stronger. I must also note that Chris approached the tasks with exceptional seriousness and desire to "do well." In his case, it became particularly clear to me that the two Constructed Response Tasks and the constructed interviews could influence students' epistemic thinking and thus function as interventions, independently from my original intentions. In a couple of instances, during the second interview, Chris explicitly referred to the CRTs as learning experiences. For example, in responding to the statement "Students who read many history books learn that the past is what the historian makes it to be," Chris said: "I disagree with that, because of those readings that you just taught me, one reading is different from another, you cannot just learn from one historian, there are many different sides."

Chris was also well aware of the change that he was undergoing as his response to the statement "History is simply a matter of interpretation" suggests:

From these documents, I would agree with that, and I think I changed my answer on that one [...] because I think it is interpretation, but I used to think that it wasn't interpretation. I thought facts were facts, but it's on who writes it, it's their interpretation of how history was seen.

Similarly to other students, Chris' criteria for building historical accounts remained very limited. Although interpretation had become an undeniable factor in the generation of historical knowledge, Chris' conceptualization of it was still too fuzzy and detached from evidence; the step into subjectivism seemed at times the logical trajectory: "Good students know that history isn't just a matter of opinion, there are many others, it's like you interpret, how you look at history, you read all the documents and then you believe what you want to believe."

Class 3. The direction and level of change was not consistent in this junior class; overall, there was a greater acknowledgment of the role of the knower, but the integration between object and subject of knowledge, in a few cases, became more problematic. Further, while Elizabeth and Ashley showed moderate changes, Jack and Mark demonstrated greater shifts in their thinking. In several respects, Mark was also an outlier, expressing several ideas demonstrating an awareness of epistemological issues much greater than the other participants in the study.

Table 4.9 summarizes data relevant to the students in this class.

Elizabeth. Across the two interviews, Elizabeth offered several examples of ways of thinking consistent with the copier stance, although at times she admitted that we "cannot know 100%," because people could not "go back in time and get the evidence." Even in these cases, however, she was confident that it was possible to

find enough evidence to get to the right story, because, “if it really happened the way it was supposed to happen, one evidence will overpower the other. You may have two things that conflict with each other, but then you will probably find more evidence that overpowers the other evidence and says that one is wrong and the other

Table 4.9

Class 3: Percentages and Averages* of utterances expressing Different Categories of Student Epistemic Beliefs*

Name	EBCO	TR1	EBSUB	TR2	EBCR	EB
Elizabeth.1	53%	40%	7%	-	-	-
Elizabeth.2	70%	30%	-	-	-	-
Jack.1	50%	22%	6%	22%	-	-
Jack.2	5%	26%	26%	42%	-	-
Ashley.1	47%	21%	5%	26%	-	-
Ashley.2	25%	55%	15%	5%	-	-
Mark.1	-	5%	5%	5%	58%	26%
Mark.2	11%	26%	5%	26%	11%	26%
Average.1	38%	22%	6%	13%	15%	7%
Average.2	28%	34%	12%	18%	3%	7%

Note. When used after a name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

is right.” Conceptualizing evidence as detached from argument was well in accordance with Elizabeth’s beliefs that stories cannot differ too much, either, because “evidence says what happened in the past.” Thus, according to Elizabeth, “you can believe whatever story you want, but stories are closely the same, so you don’t have to worry about one being like ‘This happened,’ and another story saying ‘This really didn’t happen.’”

Mark Before analyzing Mark's change across the two constructed interviews, I must note an occurrence that may have influenced the outcome. Although all students completed the CRT prior responding to the BHQ statements, Mark dedicated much more time to the completion of the second CRT; specifically, he went over the texts twice, before venturing into a response. It is thus possible that when we began the second structured interview he was more tired than the first time. His language tended to be more casual, in contrast to the first interview when he chose his words very carefully.

Mark clearly differentiated between the past and history. Within history, he believed that there was "a certain amount of truth that is set in stone, like the events that happened," a truth that would stand "whatever point of view you have of an event," "no matter where you come from." However, the way "to come upon this truth" required "reading and learning from different interpretations." Mark reiterated this idea also during the second interview, explaining that "there is a way in which an event actually occurred and then there is multiple, different ways that it is interpreted, but history itself is more of a boiling down of the different ways in which it was interpreted to find out the truth."

However, during the second interview, Mark seemed to conceive the existence of perspective more as a necessary evil than as a positive attribute of human knowledge. As such, the tendency of historical accounts to "color, and change, and make the event appear differently to others" was perceived as something inherently biased, something to cut through in order to reach the unadulterated past. His

response to the statement “Good students know that history is basically a matter of opinion” illustrates this shift.

First interview: *I don't necessarily agree with that conclusion, I somewhat disagree. Good history, I mean history is not necessarily, basically a matter of opinion; I believe it's a matter more of interpretation and gathering from different sources [...] There are events that happened and may be more than one perspective; there is, obviously, from each perspective there can be a certain amount of truth, otherwise there wouldn't be so many perspectives.*

Second interview: *I strongly disagree. As I said, I don't think that history is an opinion, I think history should be a fact. It's just, history should be a fact that is based upon, I guess, based upon the opinions of more than one source, an opinion being an historical account from one person, because historical accounts obviously can be biased.*

Thus, in the second interview, Mark strongly agreed with being taught to deal with conflicting evidence because “this would support the idea that history consists of facts that are gathered from several pieces of evidence.” He also strongly agreed that comparing sources and understanding author perspective were essential components of the process of learning history because these heuristics “are entirely to delineate biased and unbiased information.” These statements seem more in line with the copier and transition 1 stance than with the criterialist stance conveyed by several of Mark's statements during the first interview. Although the issue of bias emerged also in the context of the first interview, it was only during the second one that Mark clearly pitted it against the idea of history as facts.

In this respect, I believe that Mark offers a clear example of how hindering and frustrating the lack of understanding of how knowledge develops can be. He clearly and sincerely aimed for true knowledge of the past and was also very aware of the role of the knower in the generation of knowledge. However, lacking the experience of how this process may develop (an inference suggested by his repeated declarations that he didn't know what the historical method was), Mark seemed to perceive the role of the knower as just an obstacle (bias) that prevented his possibility of accessing the truth of the past, and not as the subject of the event of knowing. Mark's harking back to the idea that, at least ideally, history should be facts may be interpreted as an attempt to overcome the uncertainty that comes with the shattering of the referential illusion. His discomfort with a process of knowing in which there are no clear criteria to evaluate the truth of the outcome illustrates the problems of this epistemic stance:

I don't think that all students are necessarily able to [silence] synthesize accurate historical opinion based upon facts, because, obviously, one set of facts, if it includes some conflicting opinions, such as the documents that I looked through before, I mean, one person could write a response one way using the same facts than another person could write, and they can both have different papers with conflicting thesis statements, but they would be both based upon facts. Teachers don't question that, I think, it's just really, it leaves too much uncertainty, I guess, about the truth of things.

Ashley. Considered as a whole, Ashley's responses conveyed a similar epistemic stance across the interviews. While she continued to conceive history as

the past (e.g., “History is already done and it is never going to change”), she also thought that it was accessible through its remnants: “There is documents that we found, dinosaurs bones and stuff like that [...] None of us was there, but we can still [silence] some things we can be sure of.”

On the other hand, she acknowledged that historians and students may develop their own interpretations, once they know the facts. Although these elements were present in both interviews, in the second one their simultaneous presence in the same sentence made me code a higher number of utterances as TR1. Often, in Ashley’s case, interpretation (or opinion) was used to convey the evaluation of past people’s behaviors. Instead of an attempt at understanding the past on its own terms, Ashley’s opinions regarded how the past should have looked like. This example refers to the unit that the students were learning in class and Ashley cited it in response to my request of clarification of what she meant by “historical opinion.”

My opinion on the Great Depression is that I don’t know if it was as bad as they make it to be. You have the facts, and they were saying that things were really bad, but I don’t think it was like that, because they were saying that everybody was getting sick, but they could still have gone to the doctor even though they couldn’t pay the doctor, because the doctors weren’t getting paid either, so I think that everybody could have just come together and help each other out and made things better than they were.

Jack. In the first interview, Jack showed little evidence of being able to reconcile the subjective and objective aspects of knowledge. On one hand, he thought that “history is about the past, the events that happened in the past, not really

anything else.” On the other hand, he was also aware that historians interpret the remnants of the past. However, a lack of understanding of the role played by the historian’s question and of the purpose and features of the historical method made him unable to reconcile these ideas.

In a couple of occasions, his impasse surfaced during the first interview. The first instance was in response to the statement “Historical claims cannot be justified because they are simply a matter of interpretation:” “I somewhat disagree with this, because historical claims [silence]. I somewhat agree with this because historical claims is pretty much interpretation by historians [silence] Ah, I don’t know.” The second instance was in response to the statement “Reasonable accounts can be constructed even in the presence of conflicting evidence:” “I somewhat agree with this, because the evidence could be from like, sources could be from different things that could be, accounts could be skewed from different sources because, sources could be [silence] I cannot answer this question.”

In the second interview, the role of the knower became clearer; at a minimum, one could “put the documents together and take the most reasonable information.” The difference between opinion and interpretation also began to take shape:

[I]nterpretation is like figuring out what happened, opinion [silence], interpretation is taking all the facts and putting together and see what happened. Opinion is what you think that happened, like with no facts, just what you would think is happening, but with no facts.

However, Jack still lacked criteria for building historical understanding and, although he could in theory conceive that different historians might interpret the evidence

differently, he did not have much experience of conflicting historical accounts: “I read a lot of history books about the same event and pretty much say the same thing.” Thus, his heightened sense of the role of the knower made him at times lean toward a subjectivist position: “If you interpret something, you put facts together, I guess, for what you think that happened, and other people can have different interpretations;” “[W]e weren’t there, so we can’t possibly know what happened, even if there is records, they can interpret them differently and form their own position.”

Analyses of Students’ Written Responses to the BHQ

A few of the trends described in relation to analyses of the qualitative data were also confirmed by the analyses of 25 students’ written responses to the BHQ. In reporting the results, I first focus on the patterns of students’ responses. Specifically, I explored these patterns to test whether they were compatible with the kind of “epistemic inconsistency” emerged from the analysis of the interviews and looked for eventual changes across the two administrations.

In order to address this issue, I compared students’ weighted average scores on the groups of items reflecting the three theoretically derived epistemic stances (Copier, Subjectivist, and Criterialist) and calculated consistencies scores. Table 4.10 reports individual students’ scores for the first and the second administration of the BQH, respectively. Epistemic consistency would be signaled by students agreeing with items reflecting one epistemic stance and disagreeing with items mirroring the other two stances. Across the two administrations, this occurred only in the case of 5 students (identified in the tables by a gray background).

Table 4.10

Student Weighted Average Scores on Epistemic Stances

Student #	Copier		Subjectivist		Constructivist		Consistency	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	1.40	1.60	-1.00	-1.22	.50	1.63	57%	73%
2	.60	.40	-1.33	-.56	1.75	1.75	77%	73%
3	1.40	0	-1.78	-1.89	1.88	1.13	77%	86%
4	1.60	1.20	.11	1.44	1.00	.88	59%	45%
5	-.40	1.80	2.11	-.22	-.88	.50	32%	50%
6	1.50	.60	-1.33	-1.22	1.63	1.75	71%	68%
7	-.80	1.00	-.78	-1.33	-.38	1.13	55%	77%
8	.20	1.20	.67	0	.38	.43	64%	40%
9	1.40	0	.22	-1.50	1.00	-.33	48%	63%
10	.80	1.40	-.11	-.78	.75	.75	50%	68%
11	-.20	-.40	-.67	-1.56	1.00	1.88	71%	91%
12	1.20	.20	-.44	.11	1.25	1.29	73%	71%
13	0	-.20	-1.56	-1.67	-.13	.63	64%	73%
14	-.60	-1.60	-.22	0	.63	.63	64%	55%
15	1.75	1.20	.44	1.11	-.71	.63	35%	41%
16	-.40	2.60	.56	1.33	.13	1.88	55%	36%
17	.20	-.60	-1.11	-2.00	.88	-.75	77%	68%
18	.60	.80	-.33	-.22	.50	1.13	59%	59%
19	-1.00	-.40	.11	-.11	0	1.38	52%	68%
20	2.00	.20	-.44	.22	1.38	1.63	59%	59%
21	1.20	.20	-.67	-1.33	1.63	1.50	73%	82%
22	.80	0	-1.89	-1.33	1.63	1.50	73%	77%
23	1.60	1.00	-.44	-.11	1.75	1.50	55%	55%
24	1.00	0	-1.56	-1.56	1.38	.75	71%	73%
25	-.60	-.40	-.44	-.89	.25	1.00	59%	73%

Since students tended to manifest a higher degree of agreement with criterialist statements, as signaled by comparison across their copier, subjectivist, and criterialist average weighted scores, I further addressed the question about epistemic consistency by calculating consistency scores for each student. The last column of Table 4.10 reports the result of this second analysis. All but 3 students at the second administration had consistency scores inferior to 80%. This suggests that their agreement with criterialist statements was partial and interspersed with several beliefs typical of a copier or subjectivist stance. Only 1 of the 5 students identified by prior analysis as individuals that could potentially be characterized as epistemically consistent (i.e., individuals who had a positive criterialist average weighted score and negative copier and subjectivist weighted scores) also had a high consistency score (#11, second administration, consistency score = 91%). I also checked for possible consistency with the subjectivist stance (with #5, first administration, as a potential candidate) but the score remained below 80%. Thus, in regard to epistemic inconsistency, these results are compatible to what was suggested by the qualitative analysis of students' interviews, inasmuch as these results indicated that students may simultaneously agreed with statements that imply different conceptualization of the nature of historical knowledge.

In regard to change, it is difficult to identify a consistent pattern across the two administrations. Similarly to what I observed with student informants, the range of student belief systems and their modification during the course of the semester varied widely, as illustrated by the bar graphs included in Appendix I. With this caveat, inspection of the medians showed that, as a group, during the first

administration, students tended to agree with statements reflecting a criterialist ($Mdn = .87$) and copier ($Mdn = .80$) stance and disagree with items mirroring a subjectivist stance ($Mdn = -.44$). This trend continued at the second administration, although students' degree of agreement with items compatible with a criterialist stance increased ($Mdn = 1.12$), their degree of agreement with items reflecting a copier stance decreased ($Mdn = .20$), and their disagreement with items referring to a subjectivist stance increased ($Mdn = -.78$).

It is tempting to interpret the direction of change in the median values of the average weighted scores as a sign that students were moving toward beliefs typical of a criterialist stance. Yet, analysis of the consistency scores indicates that, on average, this was not the case. Between the first and the second administration, the consistency score mean value slightly increased from 61.20 ($SD = 12.17$) to 64.96 ($SD = 14.48$), but the t test was not statistically significant. The range of change was also impressive, varying from -22 to +24 percentual points, further cautioning against unwarranted generalizations.

Did the analysis of these data also identify what ideas seemed particularly problematic for the assumption of a consistent criterialist epistemic stance (second question) and did these ideas changed across the semester? Tables 4.11, 4.12, and 4.13 report the Median, the Minimum and the Maximum values of the 22 items of the BHQ for the first and the second administration. I grouped the items according to the epistemic stance that they were designed to mirror.

Table 4.11

Median, Minimum, and Maximum Values on Copier Items

	Item 5		Item 9		Item 16		Item 19		Item 20	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Median	1	0	-1	1	1	1	1	-1	2	2
Minimum	-3	-3	-3	-3	-2	-3	-3	-3	-3	-2
Maximum	3	3	3	2	3	3	3	3	3	3

Notes.

Item 5: Disagreement about the same event in the past is always due to lack of evidence.

Item 9: Good general reading and comprehension skills are enough to learn history well.

Item 16: The facts speak for themselves.

Item 19: Even eyewitnesses do not always agree with each other, so there is no way to know what happened.

Item 20: Teachers should not question students' historical opinions, only check that they know the facts.

Table 4.12

Median, Minimum, and Maximum Values on Subjectivist Items

	Item 2		Item 4		Item 6		Item 8		Item 10		Item 12		Item 14		Item 17		Item 22		
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Median	1	-1	1	-1	-2	-2	-1	-1	-1	-1	-1	-1	1	-1	1	-1	-2	-3	
Min.	-3	-3	-3	-2	-3	-3	-3	-2	-3	-3	-3	-3	-2	-3	-3	-3	-3	-3	
Max.	3	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3	2	0	

Notes.

Item 2: History is simply a matter of interpretation.

Item 4: Students who read many history books learn that the past is what the historian makes it to be.

Item 6: Good students know that history is basically a matter of opinion.

Item 8: Historical claims cannot be justified, since they are simply a matter of interpretation.

Item 10: Since there is no way to know what really happened in the past, students can believe whatever story they choose.

Item 12: The past is what the historian makes it to be.

Item 14: It is impossible to know anything for sure about the past, since no one of us was there.

Item 17: Students need to be aware that history is essentially a matter of interpretation.

Item 22: There is no evidence in history.

Table 4.13

Median, Minimum, and Maximum Values on Criterialist Items

	Item 1		Item 3		Item 7		Item 11		Item 13		Item 15		Item 18		Item 21	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Median	2	2	.5	1	1	1	1	1	1	1	1	1	1	1	1	2
Min.	-2	-1	-2	-2	-3	-2	-3	-2	-2	-2	-3	-3	-3	-2	-3	-3
Max.	3	3	2	3	3	3	3	3	3	3	2	2	2	2	3	3

Notes.

Item 1: It is fundamental that students are taught to support their reasoning with evidence.

Item 3: A historical account is the product of a disciplined method of inquiry.

Item 7: Students need to be taught to deal with conflicting evidence.

Item 11: History is a critical inquiry about the past.

Item 13: Comparing sources and understanding author perspective are essential components of the process of learning history

Item 15: Knowledge of the historical method is fundamental for historians and students alike.

Item 18: Reasonable accounts can be constructed even in the presence of conflicting evidence.

Item 21: History is the reasonable reconstruction of past occurrences based on the available evidence.

I considered as potentially problematic those ideas expressed by items whose median value signaled that a majority of the students agreed with statements mirroring a copier or subjectivist stance (positive value) or disagreed with items reflecting a criterialist stance (negative value).

Although there were a few changes across the two administrations, all ideas expressed by items reflecting a copier stance were found appealing by a majority of the students at some time or another. The median value was especially high ($Mdn = 2$) for item 20, which read “Teachers should not question students’ historical opinions, only check that they know the facts.” Granted that students may agree with this statement for reasons that are not simply epistemological in nature, I found this result supportive of the perceived dichotomy between facts and opinions emerged from the analysis of the interviews. In the course of the semester, more students came to disagree with the idea that disagreement about the past is always due to lack of evidence and that disagreement among eyewitnesses makes history impossible. On the other hand, an increased number of students came to believe that good general reading and comprehension skills were enough to learn history well. A majority of the students continued to believe that facts speak for themselves.

On the contrary, students found few subjectivist statements appealing and often came to disagree with them by the end of the semester. At the first administration, among the ideas that they found appealing were the lack of criteria in the interpretive role of historians (item 2, 4 and 17) and the absolute impossibility to know anything with certainty about the past (item 14). By the end of the semester, a majority of students agreed that, as a result of the impossibility to know what really

happened, students can believe whatever story they choose (item 10). Yet, at the same time, they disagreed with all the other subjectivist statements.

A majority of students tended to agree with all the constructivist statements. Their degree of agreement with the view that history is a reasonable reconstruction of past occurrences based on the available evidence increased at the second administration.

Students' Historical Thinking

Evidence for these data comes from analyses of think-aloud protocols collected while student informants completed the two Constructed Response Tasks and from analyses of 23 students' written responses to the CRTs. In reporting the results, I will first provide some general trends and then describe the features of historical thinking emerged from the analyses of the think-alouds, irrespectively of whether they manifested themselves during the first or second administration. At any rate, the different topic of the tasks (beliefs about Captain Cook, and beliefs about the shape of the Earth, respectively) should make it easy to identify the context of a certain utterance, whenever this may provide further insights.

In describing these features, I will refer to the categories of historical thinking identified in the rubric (sub-categories 7-11), provide examples, and offer an indication of how often these strategies were employed by the participants. Then, I will focus on changes observed across the two administrations and across classes. As with the description of epistemic beliefs, I believe that in this way the results may paint a more detailed picture of these adolescents' historical thinking and of the direction of their eventual development (or lack thereof). Finally, I will focus on

students' written responses to the CRTs and report about results emerged from their analysis.

Historical thinking features emerged. Although participants markedly differed in terms of their basic reading abilities (e.g., fluency and vocabulary), the understandings they built as a result of the reading of the six documents were substantially similar. Table 4.14 reports the aggregated frequency count for the features of historical thinking identified in the rubric (subcategories 7-11). Because students differed with respect to total number of utterances, for each student I transformed the frequency of each category into a percentage, calculated as a ratio between the frequency of that category and the total number of historical thinking codes attributed to her or him on that particular CRT task. I based the calculation of the averages reported in the table on these percentages. In this respect, I need to note that one student, Mark, approached the task in a very interesting, but considerably different way than the other participants. Specifically, he used heuristics typical of historical thinking far more often than the other students. For this reason, although I used qualitative data from his performance to illustrate evidence of historical thinking, whenever I aggregated data across students to provide some general trends, I treated Mark as an outlier and I did not include his data in the pool.

The analysis of the categories that grouped most of the historical thinking features manifested by the students during their performance on the CRT task showed the use of a few consistent strategies and the emergence of recurring ideas that I took as characterizing these adolescents' historical thinking (or lack thereof). At a broader

Table 4.14

Frequencies, Percentages, and Averages* of Utterances Expressing Features of Student Historical Thinking*

Name	AQ	AA	HTno	CP	HTyes	Total
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	
Class 1.1	40%	2%	47%	6%	7%	
Class 1.2	23%	14%	53%	12%	2%	
Kalyna.1	7 (70%)	-	2 (20%)	-	1 (10%)	10
Kalyna.2	6 (32%)	2 (11%)	8 (42%)	3 (16%)	-	19
Jane.1	1 (17%)	-	4 (66%)	1 (17%)	-	6
Jane.2	-	1 (20%)	3 (60%)	1 (20%)	-	5
Eric.1	5 (32%)	1 (6%)	8 (50%)	1 (6%)	1 (6%)	16
Eric.2	3 (17%)	2 (11%)	11 (61%)	1 (6%)	1 (6%)	18
Rick.1	4 (40%)	-	5 (50%)	-	1 (10%)	10
Rick.2	6 (43%)	-	7 (50%)	1 (7%)	-	14
Class 2.1	33%	14%	41%	8%	6%	
Class 2.2	12%	23%	43%	15%	7%	
Kate.1	2 (29%)	1 (14%)	3 (43%)	1 (14%)	-	7
Kate.2	1 (7%)	2 (14%)	10 (71%)	-	1 (7%)	14
Monica.1	2 (29%)	1 (14%)	3 (43%)	-	1 (14%)	7
Monica.2	1 (11%)	-	4 (44%)	4 (44%)	-	9
Chris.1	8 (33%)	3 (13%)	10 (42%)	1 (4%)	2 (8%)	24
Chris.2	1 (5%)	9 (43%)	6 (29%)	1 (5%)	4 (19%)	21
Juliet.1	6 (40%)	2 (13%)	5 (34%)	2 (13%)	-	15
Juliet.2	4 (24%)	6 (35%)	5 (29%)	2 (12%)	-	17
Class 3.1	35%	3%	33%	22%	7%	
Class 3.2	24%	15%	38%	13%	11%	
Elizabeth.1	4 (33%)	1 (9%)	4 (33%)	3 (25%)	-	12
Elizabeth.2	9 (32%)	7 (25%)	8 (29%)	2 (7%)	2 (7%)	28
Jack.1	6 (60%)	-	1 (10%)	2 (20%)	1 (10%)	10
Jack.2	4 (25%)	3 (19%)	-	5 (31%)	4 (25%)	16
Ashley.1	1 (11%)	-	5 (56%)	2 (22%)	1 (11%)	9
Ashley.2	1 (14%)	-	6 (86%)	-	-	7
Averages.1	36%	6%	41%	11%	6%	
Averages.2	19%	16%	46%	13%	6%	
Mark.1	3 (8%)	14 (40%)	1 (3%)	-	17 (49%)	35
Mark.2	9 (35%)	5 (19%)	1 (4%)	2 (8%)	9 (35%)	26

Note. When used after a name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

level, Table 4.14 shows that, across the two tasks, I found several instances of behaviors that may hinder historical thinking (41% and 46% for the first and second CRT, respectively). I also found that participants were usually very aware of the question posed by the task (36% and 19%, for the first and second CRT, respectively). Thus, these two codes alone accounted for more than 60% of the total codes attributed to features of historical thinking across the two administrations.

Consistently across the three classes, the instances of behaviors potentially hindering historical thinking increased in the second administration, while evidence of awareness of the question posed by the task diminished. Instances of knowledge or use of heuristics typifying historical thinking were modest (6% across the two administrations), with a different trend across the two age groups. Specifically, the two junior classes showed an increase across the two administrations while the freshmen class showed a decrease. On average, the use of some form of Cut and Paste increased across the two administrations (11% and 13%, respectively), but the direction of change was different across the three classes. In particular, it increased in the freshmen class and in Class 2, and decreased in Class 3. Awareness of an author increased across all three classes (6% and 16%, for the first and second CRT, respectively).

In the sections that follow, I provide descriptions and examples of the features of historical thinking emerged while students completed the two Constructed Response Tasks.

Historical Thinking Yes (HTyes). Unfortunately, the evidence of use or knowledge of heuristics signaling historical thinking were scarce across the two

Constructed Response Tasks. When this happened, the kind of historical thinking that I observed remained circumscribed to specific occurrences and did not inform the overall performance on the task. Specifically, I found some instances of partial corroboration across sources and attempts at contextualization and at sourcing. Despite the ambiguity that often tended to characterize these instances, I coded them as HTyes to acknowledge the pedagogical potential of these attitudes for fostering historical thinking.

I found examples of partial corroboration in a few students' think-alouds. For example, Kalyna compared her provisional answer to the CRT's question with evidence emerging from new documents ("So, still thinking he is a god."). Elizabeth, while reading Document 6, referred back to Document 1 ("Yeah, the first document..."). And after reading Augustine's discussion about the existence of the Antipodes, Eric commented: "They say it is round, it's spherical, pretty much like the other one." However, these comparisons were occasional and for the most part limited to just one instance during the think aloud.

A few students tried to contextualize the events described in the texts to gain a better understanding. For example, after reading about the bartering occurred between captain Cook and the Hawaiians, Chris said that he thought that Captain Cook "got more out of it," because the Hawaiians "didn't really know what it [iron] was, it was a foreign object, it might have looked great, but it didn't have as many uses and instead they gave him fish, coconuts and bananas which, back then, was pretty big, because it was sweet, and coconut and bananas were rare food, and took a lot of labor to get, like fish." Similarly, during the second CRT, Kate commented

about the different estimations of the circumference of the earth by saying that “back then, [...] it would be different, like the people in the Middle Ages compared to people during Columbus’s time, the way things were measured early on, like how long an inch was.” Although Chris’ background knowledge about the scarcity of coconut and bananas on Hawaii and Kate’s idea about measurement units are questionable, I interpreted these occurrences as attempts at contextualization. I’ll further discuss the role played by content knowledge in the section discussing instances of Historical Thinking No.

In terms of sourcing, I found that students did not spontaneously read the references nor used ideas from them to interpret the documents. Chris offered an interesting example of the potential effect of directing student attention to the author of the texts. Once prompted to consider the references during the first CRT, he realized that the first document had been written by Mark Twain. In his case, this “discovery” prompted a process of revision of his prior interpretation and of the way in which he answered the CRT’s question.

I read a lot of Mark Twain and, if you read his Tom Sawyer and Huckleberry Finn, if you read those books you wouldn’t get a clear understanding, but if you read his other ones, his kind of hate for humanity, he thinks that human people are like the worst animals out there, and are eventually going to destroy themselves one day, I guess, reading this again, it would probably make more sense if you, if I knew that it was him, because it kind of sounded like him. Because, once again, he is pointing out more than other documents that the Hawaiians, I don’t want to be mean, but were so stupid to believe that

he was a god and that they just kind of gave him everything [...]. And Mark Twain doesn't like religion either, so yeah, I guess that would kind of change my answer.

However, since he did not know any of the other authors, Chris was unable to use the same heuristic to revise his prior interpretations of the other texts. Similarly, during the second CRT, Chris spontaneously looked at the authors of the documents, but, also in this case, he “did not recognize anyone.” However, once he understood Russell’s argument (i.e., nineteenth century historians “projected their own ideals upon heroes of the past”), Chris was quick in checking the dates of the prior documents to test his thesis and concluded: “All, they were all like that, like this one is saying how they lied just flat out and this one is saying that they knew, and another one, so...and the reason for saying, these were the nineteenth century writers he was talking about.” Thus, in this case, by looking at the sources and corroborating them, he was able to evaluate Russell’s argument, although he did not know any of the authors.

Within this sample, Mark’s performance on the Constructed Response Tasks stood out as particularly different, because he demonstrated a higher frequency of use of heuristics that may facilitate thinking historically. On a general level, Mark interrupted the reading of the documents to interject comments and questions much more often than the other participants. This might have been partially related to his remarkable metacognitive awareness, possibly fostered by his personal interest in psychology, and especially in understanding why he “thought about certain things the way [he] did.” Nevertheless, his first think-aloud showed a constant dialogue with

the authors of the documents, a conversation during which Mark often challenged the trustworthiness of the accounts. For example, in reading that Captain Cook was offered a hog in sacrifice, Mark asked: “How do they know it was in sacrifice and not just a gift?” Again, after completing the reading of Document 1, he commented:

My thoughts here is that when I read ‘these distinguished civilities were never offered by the islander to a mere human beings’ [...] I question the accuracy of that, because if this is the first time that they landed on this island, is there really a way that they can know about that?

In addition, Mark paid close attention to the perspective offered by the documents and noted differences between texts. He mostly used cues provided by the language employed by the authors to guess about their point of view and the purpose of the account. For example, after reading Document 5, he said:

This is completely contrary to the first document I read, that said that they received him as a god and took him to the main town. This seems more actual, more didactic, the other seems more of a fictitious story; it sounds like a grand jury report [...] maybe by Cook to his [...] native land to make himself, white people, look...

Yet, like the other students, Mark never looked at the references while working on the first CRT, although their examination would have provided an answer to a few of his questions. Thus, his consideration of perspective fostered a generalized suspicion toward the authors of the texts more than providing a tool for using the documents available to address the question asked by the task. During the second CRT, Mark said that he had “paid more attention” to the authors of the sources, trying to find out

whether the text was written in someone's interest or to identify the perspective from which the document was written. However, the think aloud did not show any evidence that these considerations affected the interpretation of the texts, since Mark seemed to take the documents at their face value.

Mark was also careful in considering the cultural context in which the events took place and, contrary to the other students, he found Document 4 in the first CRT particularly useful, in this respect:

When I read this, I kind of think about how probable it is that the native Hawaiians received Captain Cook believing that he was a god, because he says that other Polynesian people did the same. [...] [T]his kind of makes me think about the Eurocentric view, how the native Hawaiians, the Polynesians received them, the kind of European perspective seems a little arrogant, obviously.

This sensitivity may have been related to an experience Mark had in a previous history class and that he mentioned in another part of the interview. In this world history class, the teacher challenged the European point of view of the curriculum and incorporated alternative views, making the curriculum "less biased," in Mark's words. In so doing, she probably challenged the idea of a singular narrative faithfully conveyed by the textbook.

Mark was therefore more critical than his classmates toward the documents he read. However, once he acknowledged the presence of a historian, he had no criteria for using this awareness to foster his understanding and evaluation of the sources. In addition, while he tried to empathize with the Hawaiians and imagine how the events

may have looked like from their point of view, Mark accepted unquestioningly the stereotypical idea of medieval darkness and of its “antiquated level of knowledge.” This difference across the two CRTs suggests that exposing students to alternative narratives does not necessarily foster historical empathy if, at the same time, it does not provide the tools for understanding how a historical narrative comes to be in the first place.

Especially remarkable was Mark’s refraining from rushing to an answer to the question posed by the tasks and his willingness to work within the limits set by the sources at his disposal, attitudes that he maintained across the two think-alouds. For example, after reading about Kū-‘ohu’s doubts, he said; “I think about what his position was and why did he do that? I do not necessarily answer these questions, but I just ask them to myself.” Only after he had finished reading all the documents did he conclude that he had “kind of brought the idea full circle in [his] mind and constructed an opinion, throughout the mix of perspectives on it.” The answer he constructed was expressed in conditional terms and actually kept in consideration elements coming from all the different texts. On the other hand, the lack of appropriate heuristics made Mark stop shorter than what the documents would have allowed him. Thus, after reading twice all the documents comprised in the second CRT, he concluded:

It is difficult to answer. It is really hard to say based on these documents what the prevalent idea was from the people, because a lot of these documents do not really reference what the people thought, because this is, I mean, a document of the Church – Document 2 – Document 1, I guess, is just a book

about Columbus, that was published, I am not sure whether it was a text in someone else's interest. [silence] I don't really think, from the documents, it doesn't really show that there was a general consensus about the shape of the earth at the time of Columbus. Really the documents, I think, conflict too much to, not necessarily conflict, but they paint a picture that does not necessarily explain what the general consensus was.

Historical Thinking No (HTno). Conversely, the evidence of use of heuristics clearly incompatible with historical thinking was abundant. One of the most recurring behavior regarded students introducing in their interpretation of the documents or in their constructed response elements extraneous to the sources provided. Although they often formulated these statements as “guesses,” they did not treat them as working hypotheses to be checked against the documents available; rather, these provisional “guesses” tended to blend with other bits of ideas extracted from the readings, often influencing student understanding. For example, Juliet made an analogy with some stories she knew, trying to make sense of Hawaiians' behavior:

I think that they just wanted someone that they believed could help them, in a way, because those gods, like in the stories I guess, they have a purpose, like the money god, the love god, or that he could help them out in some way, and so that they were trying to make him feel welcomed.

Similarly, Kalyna summarized Document 4 in the second CRT adding ideas completely extraneous to the texts:

Here it is saying that the Greek man who said that the earth was round was Ptolemy, and they just denied his hypothesis and they imagine that the earth is

a giant turtle standing on a giant snake that is biting its tail and that an elephant is standing on the giant turtle and that the earth is standing on the elephant.

Chris tried to gauge individual's intentions and ventured into guessing, too:

Captain Cook, in a way, I'm thinking, [was] kind of messing these people up; so, on occasions in which they give thanks and celebrate certain holidays he led them to believe that he is a god and they don't have to do this anymore. Encourages screw ups in their whole traditions.

This last quote also illustrates a case in which these additions became influential lenses that colored the overall response. Chris continued to build on the idea of a mean Captain Cook, that “took advantage of the situation,” “got more out of it [barter] than the Hawaiians,” and was given “gold, and sacrifice, and lot of stuff, lot of great stuff.”

In a similar fashion, in the second CRT, students often built on several misconceptions about the Middle Ages and Columbus. Ashley, for example, remembered “reading about Columbus” and the fact that “he thought that it [the earth] was flat,” and that “at the end, [one would] just fall off.” She kept revisiting this idea during the whole think-aloud, compared it only with Document 2, ignored all the other texts, and commented that the question was “kind of opinionated,” because it didn't have “a lot of facts.” In the end, she concluded that “they had no way of knowing, unless somebody went round the whole world and that would take a very, very long time.” She also noted that answering the question would have been a lot easier “if we had these colonial charts,” and thus we could have a more precise

idea of Columbus's knowledge. Juliet also had the same misconception.

Immediately after reading the question, she said that she already knew the answer and that "they thought that the earth was flat and that you could fall off it."

Chris said that his initial confusion stemmed from the fact that he "knew that his [Columbus's] ideas were against what was known back then, that they weren't viewed very kindly, that you were punished if you run against what the Church said." He also asked whether Columbus was killed for his ideas or put into prison. When I told him that this wasn't the case, Chris reconciled his appreciation for Russell's argument and this new knowledge by stating that "if he [Columbus] didn't get punished, I guess, people did know, he brought back convincing evidence."

In building understanding about specific issues, students seemed to weave together prior ideas (in the form of prior understandings, guesses, beliefs, prior knowledge, or misconceptions) and elements of the texts they were given in such a way as to obtain a story that was plausible in their eyes. Students did not submit any of these components, nor the resulting story to any standard of justification; it was precisely in this respect that this "default" attitude run against historical thinking, making it indeed an "unnatural act" (Wineburg, 1991).

Another stumbling block for thinking historically regarded a lack of appreciation of the authored nature of texts. In several cases, students seemed to be unaware of the importance of taking into account the author of a document in building understanding. Specifically, once prompted to consider the reference provided at the end of each document, they acknowledged that it contained "where it comes from" (Eric) or that it was "just a little who wrote it" (Rick). However, when

asked whether they read it, they responded in the negative and justified their behavior by noting that “they don’t have information in the quote” (Eric) since the task did not explicitly ask them any questions about the authors of the sources. Only Ashley admitted that she would use the reference in two cases: “so they know that I am not plagiarizing,” and if she used a quote from a document and needed to state the source for that quote.

When asked explicitly, students also dismissed the possibility that references could aid in the interpretation of the documents. For Kate, knowing about the origin of a text was not going to affect how she wrote her paper because the reference could not dispel the doubt that the account was just a rumor. Similarly to Eric, Elizabeth said that the reference was “just redundant” because, although it reported the author of the text, it had nothing “to do with the question.” Jack summarized this widespread behavior:

I don’t read the author, I kind of sort of glance at it, so I can pretty much absorb information, pretty much. I don’t really use the author, as long as it is not in a response or anything.

As these examples illustrates, not only these students treated these texts as authorless; they also positively stated that there was no use in considering the author of a text to build understanding.

Monica offered a further insight into student sourcing (or lack thereof). Like the other participants, Monica ignored all the author references. However, after reading Document 6, she immediately looked at the reference and noted that it was

from the Apotheosis of Captain Cook. This is her explanation for this different behavior:

It was in first person, so it kept saying 'I' a lot and it helps to know [...] who is talking because, if there is a point of view, if he was a native from the island or another person, a European, male or female, all different factors.

Monica's example highlights the importance for evaluation of having the explicit voice of the author easily audible in the text, thus confirming prior research of adolescent reading of multiple texts (Paxton, 2002). However, Monica seemed also to imply that only certain texts are "opinionated," thus deserving a particular scrutiny. In fact, when asked why she did not check the other sources, she replied that "they didn't seem as opinionated, so the source didn't matter as much."

I found evidence of this way of thinking also in a few students' transcripts of the second CRT. These students often referred to the first CRT and reported that they had paid more attention to the references; very seldom, however, did they find this strategy useful. For example, when further prompted to explain what criteria she followed in evaluating the different documents, Elizabeth said that they seemed accurate, because "they pretty much gave people, and place, and the time, Document 5 gives like statistics; I mean, if you have that, it's pretty accurate when you have stuff like that. I believe them." Also Mark, who read all the references during the second CRT and appeared to be especially sensitive to the subtext of the documents, seemed to believe that only some documents need close scrutiny, because potentially more biased:

[T]he source from the Church [...] just because it was from the Church and during this time period there was, I know for a fact, a lot of corruption things in the Church and [...] it seems it's the Catholic Church, which means more corruption at that time period [...] that shows certain bias in that document so that it hasn't to be taken at face value.

Issues of chronology aside, the implications of this attitude for the exercise of critical thinking in daily circumstances in and out of the school setting is worrisome, especially considering that most textbooks and several informational media use an “authorless” style, giving the impression that what is conveyed are simply “the facts.” Further, this attitude is compatible with the belief in a dichotomous relation between facts and opinions, a belief I found quite common across these students and that I discussed in the section regarding those epistemic beliefs coded as TR1.

Students voiced also other criteria to evaluate the trustworthiness of historical sources, although the issue of “selective bias” still seemed to lurk behind these approaches. For example, when I prompted Elizabeth to consider the date of the documents, she said that she would consider as more accurate the documents written at a time closer to the events, because the more recent sources “are more like [...] people’s opinion right now.” Applying this rationale, Elizabeth first said that Augustine’s text was probably the most accurate to address the questions of beliefs about the shape of the earth during Columbus’s time because it was the oldest; when prompted again to consider whether it belonged to Columbus’s time, she added also Irving’s text [1890] “because they are closer to the time.”

These examples also illustrates that students had trouble in using chronological ideas meaningfully. Although they could correctly state that the Greeks came before the Middle Ages and Columbus came after, they had problems in linking dates to any kind of historical context. Juliet provided the clearest example, in this respect. When I asked her whether she knew in what century Columbus crossed the Atlantic, she initially said that she had no idea, but immediately added: “nineteen, isn’t it 1982 that Columbus sailed the ocean blue?” She responded to my puzzled look, asking for confirmation that “there is a two, right?” then venturing a 1909, and finally concluding that she “was bad with years.” I believe that what is at stake here is much more than remembering dates accurately; if this were the issue, cleverer rhymes might even do the trick. For Juliet, dates were completely meaningless, so much so that she did not perceive the unreasonableness of dating Columbus’s voyage little more than two decades (or a century) ago. Under these conditions, thinking in terms of historical context and drawing reasonable historical inferences became practically impossible.

Introducing elements completely unrelated to the sources and demonstrating serious misunderstandings about sourcing and use of chronological thinking were occurrences widespread across all the participants. Other manifestations of behaviors and ideas that seriously hindered historical thinking were more idiosyncratic, but I believe not less useful for understanding potential stumbling blocks.

In the first CRT, several students seemed to have difficulties in reading and interpreting Document 4. Compared to the other texts, its language was probably more challenging and its content more abstract. What did students do when they

found sources, or part of texts, that they could not fully understand? Chris offered an example. After reading with some difficulty Document 4, he commented that he did not “think that document actually helps with the question.” He then unsuccessfully tried to summarize the text, and concluded that the document was not clear to him, although he was actually able to identify a main topic of the text (“I think it just discusses the people in their beliefs to their god and I guess I understand that.”). Finally, he confirmed his prior evaluation, saying that: “I just don’t think it really helps with the question.”

In the case of Chris, this dismissal was particularly surprising, since he had previously demonstrated consideration for the historical context. The other students usually did not offer any comment after reading this document. However, their constructed response did not refer to this text nor used any part of its content; an occurrence compatible with the hypothesis that students simply dismiss what they cannot or find hard to understand.

I began to test this hypothesis during the second CRT. I asked students who appeared to struggle in understanding some of the documents and dismissed them from their final response what would they normally do when faced by a similar occurrence. Monica provided a clear rationalization:

I just ignore it, and not use it in my explanation, especially if they give you a lot of documents to use [...] I guess, if you had a lot of time, you could go through and figure out what it means, but if you don’t have that extra, you just like skip it. If I don’t know something, I rather explain something that I know

what it means than being unsure about something and trying to prove what it means. You know what I'm talking about?

Considering that historical thinking is characterized by openness to the “other,” this attitude of discarding what cannot be easily understood according to one’s present measure constitute a grave impediment. Similarly, after reading all the documents and concluding that the Hawaiians needed to believe in a god that could help them, Juliet admitted that the whole story was confusing, because “it goes back an forth, with some people thinking he isn’t a god and they give all these things to him.” However, she remained unable to deal with the issue, did not acknowledge the conflict in her final response, and introduced several elements extraneous to the texts.

Cut and Paste (CP). Although I coded only a small percentage of the utterances as Cut and Paste (10% and 13% in the first and second CRT, respectively), nine out of twelve participants in the first CRT and ten out of twelve participants in the second CRT used this approach in building their response. In the first CRT, most students focused on some form of worshipping of Captain Cook, on the exchange of goods between Cook and the Hawaiians, and on his arrival on a big ship. Overall, students chose a few concrete details offered by the documents, dismissing those elements that were probably more difficult to understand or that could not be easily reconciled with the idea of Hawaiian mistaking Cook for the returning god Lono. The preference for this narrative might have been an artifact of the sequence of the documents in the task, since the first document strongly supported this idea. Unfortunately, the data from this study did not allow me to fully check this hypothesis because all participants read the texts in the same order. However, the

transcripts of the second CRT suggest that the order of the documents does not always play a major role in how students choose to focus on specific aspects of the texts. In fact, in this case, students more often mentioned the measurements of the earth by the ancient Greeks, the denials of the Church, the Bible, and the different views of science (and scientists), issues that are discussed mainly in Document 3, 4, and 5. Only one student referred a few times to Document 1 as portraying the beliefs that were more common in Spain.

The process followed by the students in picking and choosing among the texts was fairly consistent across the two administrations. For the most part, students briefly stopped after reading each document and identified one or more ideas that they found particularly meaningful. This is how Kate described the process she would employ when faced by this kind of task:

I would do it, like sorting, reading each one and then writing about it after [...] and when I write I would read it with my last two sentences of what I was writing so that I can make it flow in my paper, but so that I can understand each one separately and I am not going to get stuck.

While Kate seemed focused on the final outcome of the task (writing a flowing paper), Monica highlighted the role of prior knowledge in orienting what she would retain from each text:

I based on prior knowledge, and then I guess I just went through and read every document and looked for what I thought would be helpful to my argument. Like, I came up with an argument and then went into the readings

for things to support the argument and I picked up other information to add to what I was saying.

Since intertextual reading was a rare occurrence, students usually tried to formulate their overall understanding only after reading all the documents provided. At that point, they selectively focused on a few ideas, usually those that they had already mentioned while reading, sometimes adding some further element, extraneous to the texts. Monica's transcript of the first CRT offers a nice illustration of this process:

So the problem was that they assumed that he was a god, because they saw—where is that—Document 3, I think, they saw the big ship and so probably they did not usually see, so they made an exception to go out and see it, so they thought that he was a god and worshipped him.

Although Monica appeared to refer back to the documents, she attributed to Document 3 several elements that were not in the text. For example, Document 3 referred to a vessel, without mentioning a “big ship” and did not say that the people worshipped Captain Cook. However, Document 2 mentioned a ship and the descriptions offered by Document 1 suggested that the Hawaiians worshipped Captain Cook. This sentence seems, thus, to “cut” a few ideas out of the first three documents and “paste” them together to obtain a narrative, probably in line with her initial argument.

While conflicting information disappeared (e.g., Kū-‘ohu's doubts), links with prior knowledge did not, as the rest of the quote illustrates:

But I also think so because he let them think that, he could have told them he wasn't a god, but he probably wanted to save his own skin, like Johnny Depp in Pirates of the Caribbean and he also got things from them, like in document, what was it, five, barter iron, because they needed it for tools and weapon, so he got food, and fish, and stuff like that—I remember this—then they saw he was someone they should worship and he turned his back to them.

Monica mentioned *Pirates of the Caribbean* while reading Document 1, saying that the description of Captain Cook being brought to the temple reminded her of the movie. This connection appeared again in her constructed response, unchecked and mixed with other recollections from the documents, bringing her to the conclusion that Cook/Depp “turned his back” on the Hawaiians. In this example, as in other several cases discussed as instances of HTno, prior knowledge got also “cut and pasted,” whether or not pertinent to the task or accurate in respect to the question addressed.

In a few cases, students realized that the accounts differed; in these cases they appeared to abide to a sort of majority rule. For example, in reading the documents of the first CRT, Jack noted that Kū-‘ohu thought that Cook was not a god and that, according to Document 6, “the European said that they were gods and the Hawaiians believed them and not that the Hawaiians thought of them as gods.” Although this statement suggests that Jack misunderstood Document 6, he interpreted it as rejecting the idea that the Hawaiians simply mistook Cook for their returning god Lono. However, immediately afterwards, in answering the question posed by the task, Jack

said that “based on the documents the Hawaiians thought that he was the god Lono and that they saw him at Makahiki and went with their ships and gave them things from the island.” When questioned, Jack confirmed that he interpreted Document 6 as rejecting this view; however, he still considered his answer reasonable because, five out of six documents supported it.

I found even more cases of abiding to a majority rule in the transcripts of the second CRT. Elizabeth, for example, began answering the question by saying that “the prevalent belief about the shape [of the earth] was kind of 50/50 back then.” When I asked her to explain why she came to this conclusion, Elizabeth reconsidered all the documents and assigned each one of them to the “flat” or “round” camp. At this point, she realized that only 2 documents, in her view, supported the idea of a flat earth and thus she modified her initial response stating that “most people believed that the earth was round.”

Other students tried to build a chronological narrative to account for differences in the texts. Eric, for example, concluded:

[P]eople at one time believed that it [the earth] was flat, but like, on the other hand, for a while, the Greeks and the Egyptians found out that it was round, but then the Greeks lost the information and all that and then Columbus and everybody there, back in Spain, go back to think that it was flat and when Columbus sailed he found out, and it was round again.

An alternative approach was offered by Ashley, who noted that some documents reported that not all Hawaiians believed that Captain Cook was a god. In cases such as this, she said that she would “usually compare” the documents, “and see

how they differ, and then, if there is some that was at the scene” she would “go by that.” Used as the only criteria to evaluate the trustworthiness of sources, the belief that eyewitnesses always know best is clearly problematic from an epistemic point of view. However, in terms of historical thinking, this idea did not affect Ashley’s performance, since she did not check the sources of these documents.

I noted this disconnection between students’ rationalization of the strategies that should be employed (or that they believed they employed) in this kind of situations and their behavior in several cases. Kate, for example, concluded that “Hawaiians believed in any person that looked like gods, and they thought that anyone could be god,” although she said that she would consider each document in answering the question, as the quote reported at the beginning of this section illustrated. On the other hand, I also found a high degree of consistency between students’ performances on the CRT and their rationalization of their behaviors in a few other cases. Monica and Jack were good examples of such consistency.

Ashley offered a second strategy for dealing with conflicting multiple sources. She said that she would “make paragraphs and write down similarities and differences,” and if she had two different opinions, she would “write paragraphs on the opinions.” I found the fundamentally passive role attributed to the learner that emerged from this quote truly remarkable, as it signaled the cognitive impasse and the affective indifference that characterize the “cut and paste” approach. Lacking effective criteria to establish a meaningful relations with and across these texts, the learner’s role is reduced to place snippets of information (or opinions) one beside the other. Even more worrisome is the fact that students did not perceive this outcome as

problematic. Further, the data do not suggest that students would be in a better position to make up their mind if they were not constrained by a given set of documents. Mark, for example, said that he “would probably use the internet,” do “a vague search,” and then “take different pieces of information from different sources.” He also stated that he wouldn’t believe all that he read, but when pressed to elaborate on the criteria that he would use to make his decisions, he mentioned only how he would detect issues of bias.

Awareness of the Question (AQ). Students often demonstrated awareness of the question posed by the task, especially during the performance on the first CRT task. These utterances were scattered throughout the think-aloud, suggesting that such awareness characterized the whole performance. For example, after reading each document, students generally paused, and tried to identify elements that could be used to answer the question. If they did not find any, they usually dismissed the document; however, not all the elements they identified while focusing on each document eventually contributed to their answer. For example, during the first CRT, after reading Document 2, Jack commented:

So this priest pretty much knew that they were not gods, but to be sure that they were not gods he pretended that they were gods. Most of the other people thought that Cook and his men were gods and that their giant ship was a floating island. This is pretty much it for this one.

However, as I reported in the prior section, Jack built his response applying a majority rule and this note about Kū-‘ohu’s doubts was dropped.

In other cases, the question was used to dismiss the content of part of a document or an entire document from further consideration. Elizabeth, for example, noted that “the fourth document doesn’t really say too much about what the Hawaiians thought; a lot of it is just saying that Hawaiians were not the only Polynesian people, it’s not talking about Hawaiians and what happened with Cook.” Similarly, Kalyna decided that part of Document 3 in the second CRT was “about Egyptians’ culture, not so much about the shape of the earth.”

Awareness of the Author (AA). Although the second CRT showed an increase in such awareness, with the exception of Mark, students treated the texts as authorless. This occurrence is even more problematic because I took as evidence of such awareness not only the explicit mention of an author but also the use of personal pronouns in restating part of the texts, as illustrated in the following examples: “Now they are saying that he was, that they imagined him, that someone made up a story” (Juliet, after reading Document 6). “Here, in a way, I think he’s saying that Cook is taking advantage of the Hawaiians” (Chris, after reading Document 5). “Here he is saying that it must be foolish to a man to go round the globe and find other lands” (Kalyna, after reading Document 2).

Since the reference to a statement of the text as something mentioned by someone (suggested by the use of personal pronouns in lieu of the impersonal “it”) did not trigger any kind of sourcing, I remain very cautious in interpreting these utterances as clear indications that students were looking at texts as communications from an author. Overall, students treated the texts as mere conveyors of information

and not as someone's voice, an occurrence that may concur to explain why students did not dialogue with the texts, but "sifted" them.

Changes in Students' Historical Thinking

Table 4.15 summarizes averages of frequencies of features of historical thinking emerged across classes and administrations. As I did in reporting the aggregated data, for each student I transformed the frequency of each category into a percentage, calculated as a ratio between the frequency of that category and the total number of historical thinking codes attributed to her or him in a specific administration of the CRT. I based the calculation of the averages reported in the table on these percentages. Also in this case, I treated Mark as an outlier and I did not include his data in the pool.

Table 4.15

Averages of Utterances Expressing Features of Student Historical Thinking by Class*

Name	AQ	AA	HTno	CP	HTyes
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Class 1.1	40%	2%	47%	6%	7%
Class 1.2	23%	14%	53%	12%	2%
Class 2.1	33%	14%	41%	8%	6%
Class 2.2	12%	23%	43%	15%	7%
Class 3.1	35%	3%	33%	22%	7%
Class 3.2	24%	15%	38%	13%	11%
Averages.1	36%	6%	41%	11%	6%
Averages.2	19%	16%	46%	13%	6%

Note. When used after a name, .1 denotes data referring to the first administration and .2 denotes data referring to the second administration.

*Percentages and averages are rounded to the closest integer; thus the sum by row does not necessarily equal to 100.

The data reported in Table 4.15 suggest that changes in historical thinking were very modest. In particular, evidence of use of heuristics signaling historical thinking (HTyes) remained quite stable across the two administrations, while the use of heuristics hindering historical thinking modestly increased. These trends were similar across classes, although HTyes had a modest increase in Class 3 and a modest decrease in Class 1. I compared each student performance on the two CRT tasks in order to check whether eventual differences present at the level of individual students disappeared in aggregating the data. Contrary to what I found in the analysis of epistemic beliefs, this further analysis confirmed that students did not differ much in terms of their ability to think historically across the two administrations, manifesting the same traits I described in the prior sections during the two think-alouds.

Moreover, although students differed in their capacities to understand single texts and in the level of interest in the tasks, their performances in terms of historical thinking remained fundamentally similar. Differences across the two administrations mainly regarded an increased role of student prior knowledge in building understanding and constructing the response, increased attention given to the references, and a more widespread use of what I called the “majority rule.” I describe these changes in the rest of this section, but I omit to report the results of changes at the level of each student and each class because they do not add further understanding of the features of student historical thinking.

Students demonstrated to be more familiar (or thought to be more familiar) with the topic and the period addressed in the second CRT. Several participants stated the belief that people at the time of Columbus thought that the earth was flat,

sometimes adding negative connotations of the “Dark Ages,” the feudal system, and the role of the Church. A few students also thought that Columbus’s voyage “proved” the spherical shape of the earth. These bits of prior (often inaccurate) knowledge seemed to play the same role that text’s elaborations played during performances on the first CRT. Specifically, students took these pieces of prior knowledge for granted and never questioned them in light of the documents. Rather, these prior ideas were woven into their responses, often acting as filters in deciding what parts of the documents were cut and what parts were pasted into their constructed response.

Activation of prior knowledge is often encouraged as an effective pre-reading strategy. Data from this study suggest that students quite naturally access their prior knowledge and use it to build understanding. However, its influence is not unequivocal. Used unreflectively and uncritically, prior knowledge may also hinder understanding. Another consequence of this attitude was a looser relation with the question asked by the task, an instance reflected in the lower percentages of utterances coded as AQ (Awareness of the Question).

During the second CRT, students referred more often to the authors of the documents, occasionally reading the references provided at the end of the texts. The increased percentages of utterances signaling some awareness of the text authors reflected this tendency. A few students also mentioned the prior CRT, remembering that at the end I had asked them whether they had read the references. Yet, this increased awareness of the presence of an author did not foster the critical evaluation of the texts nor aided intertextual understanding. Considered as additional details

pertaining to the document, this additional information was almost always dismissed as useless.

Finally, in building their responses, students increasingly tended to rely on counting how many documents suggested a similar view (i.e., people at Columbus's time believed that the earth was flat). From these results, they inferred what might have been the prevalent beliefs at Columbus's time (if they thought that one view was clearly preponderant among the documents) or how different beliefs might have been distributed among the population (if they thought that different views were equally represented in the texts). In either case, they took the claim of a text at face value and did not corroborate it with other documents, as if a text's claim could be considered evidence in itself and a majority of texts supporting a similar view could be treated as preponderance of evidence. The different trend in using some form of Cut and Paste in class 3 was mainly due to the performance of one student (Ashley), who found the second CRT more difficult because the question seemed to her "more opinionated" and not based on facts. Thus, in answering the question, she dismissed any reference to the documents.

Analysis of Students' Written Responses to the CRTs

The analysis of the written responses of 23 additional students in Lauren's class confirmed what emerged from the analysis of the think-alouds. Table 4.16 summarizes the number of responses that manifested a specific trait of historical thinking or suggested a behavior that may inhibit it, for the first and the second CRT, respectively.

Specifically, I found no evidence that students were giving any consideration to the author of a document, or that they were evaluating the sources. For example, they never mentioned the author's name or the title of the source from which the texts were excerpted. In the few cases in which responses referred to a specific text (6 for the first CRT and 3 for the second CRT), they did so by citing the document number. Conversely, several students (17 for the first CRT and 11 for the second CRT) built their responses by cutting and pasting snippets of ideas from one or more texts, freely discounting those texts or parts of texts that conflicted with their story line or were perhaps perceived as more difficult (e.g., document 4 in the first CRT). In a few cases, the ideas included were also distorted, suggesting a lack of understanding of the texts or unwarranted interpretations (10 for the first CRT and 11 for the second CRT). A few students based their response only on one of the documents included in the packets (5 for the first CRT and 1 for the second CRT).

The inclusion of relevant, direct quotations from the texts was also limited (6 for the first CRT and 3 for the second CRT) and, in some cases, unrelated to the claim that the student was making (3 for the first CRT and 1 for the second CRT). Similarly to what observed in student informants, responses also included details, conjectures, and additional elements that were not supported by the documents (7 for the first CRT and 12 for the second CRT). Also in this case, increased familiarity with the topic of the second CRT seemed to elicit the emergence of misconceptions and to foster this kind of behavior.

Table 4.16

Number of Students' Written Responses to the CRTs Signaling Features of Historical Thinking or Lack Thereof

	Reference to Documents		Justification of response		Appropriate Quote		Cut and Paste (correct)		Factual Information (1 document correct)		Cut and Paste (incorrect)		Factual Information (1 document incorrect)		Inappropriate Quote		Unwarranted Addition		
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Total	6	3	2	2	6	3	17	11	5	1	10	11	1	3	3	1	7	12	

Only two students for each CRT included in their responses a justification of their conclusions that implied comparisons across the sources. In all these cases, students acknowledged that the sources suggested that different beliefs (about Captain Cook or about the shape of the Earth) were probably espoused by different people at that particular point in time. Yet, they came to their conclusion by counting how many documents supported a specific beliefs; an approach very similar to what I previously identified as abiding to a majority rule.

CHAPTER FIVE

DISCUSSION

After having described the range of epistemic beliefs and the traits of historical thinking expressed by students and teachers, in this section I discuss the limits and the contributions of the study to a better understanding of these constructs. Then, I focus on the relations between the constructs identified in the theoretical model and explored in the study. What do the results suggest, in this respect? Within the latter line of reasoning, I first focus on teachers and examine relations between their epistemic beliefs, traits of historical thinking, goals, and pedagogical practice. Then, I consider the data in their entirety and discuss how pedagogical practices may have contributed to the epistemic development (or lack thereof) of the students.

Limits of the Study

Although I believe that the results of the study contribute to a better and more nuanced understanding of the development of epistemic cognition within the history classroom, the interpretation and generalization of these results is constrained by several limitations. First, in studying epistemic beliefs and historical thinking within the classroom setting, I had to be respectful of the goals and demands of that particular learning context. For example, the choice to limit to four the number of informants in each class was dictated by the inopportunity to take students out of the class for interviewing if the teachers felt that missing a specific lesson could significantly impact their learning experience and success in that class, a concern that was especially high at the beginning of the semester. Thus, the descriptions of epistemic beliefs and historical thinking that I obtained are based on data collected

from a relatively small, partially self-selected sample of student informants. The timeframe during which I interviewed students had also to be adjusted. As a result, the first set of student interviews took place at the beginning of December and the second set towards the middle of January, an occurrence that may concur to explain the little change I observed in terms of historical thinking. Further, only in the case of Lauren's class, students' willingness to participate in the study allowed me to extend the data collection beyond student informants. Although analyses of students' written responses to the BHQ and to the CRTs confirmed the trends emerged from the analysis of interviews and think-alouds of student informants, I cannot claim the same in the case of Ellen's and Danielle's classes.

Second, as teachers often mentioned, the larger institutional context surely played a role on the pedagogical choices that they made. My own decision of running the study in this particular school system was actually based on its policy of encouraging the examination of primary sources within the history curriculum. Although I appreciate the role of these larger social structures and the influence that educational policies have on what happens in the classrooms, the perspective of this study is mainly psychological and its main focus remains on students' and teachers' cognitive processes. While the study accounts for some of the constraints introduced by the larger institutional context, my observations and data collections were limited to the classroom contexts and, within these contexts, they were focused on the constructs under investigation, limiting the possibility to study the moderating or mediating effects of other factors (e.g., social and motivational), which I could only access through informal exchanges with teachers and students. Thus, although I

believe that the results of this study suggest several implications in terms of curricula development, assessment, teachers' education, and teachers' professional development, these recommendations are based on the study of individual students and teachers and not of the system as such. These limits also affect the warrants for generalizing the results to other classes since they do not allow comparing classes on these other variables.

Last, but not least, my conceptualization of these constructs surely influenced my class observations and analysis of the data, drawing some occurrences to the forefront and leaving other happenings in the background. Although I tried to avoid or at least control for unjustified subjectivity, the results of the study are clearly circumscribed by my own understandings.

Contributions of the Study

Keeping in mind the limitations discussed in the prior section, I believe that the results of the study enrich extant understanding of history specific epistemic beliefs and of the possible structure of epistemic beliefs, in general. In respect to historical thinking, they extend the findings of prior studies (especially Lee & Ashby, 2003 and VanSledright, 2002) by focusing on high school students and teachers and by identifying a set of key ideas characterizing and potentially hindering historical thinking within this specific group. The next sections focus on a few of these key understandings.

Epistemic Consistency

Within each structured interview and with the exception of one student during the first interview, each student voiced ideas belonging to different categories, with

one category emerging as clearly preponderant only in very few cases. In large measure, teachers' interviews reflected the same phenomenon, suggesting that epistemic inconsistency may characterize individual's thinking well beyond the K-12 school environment.

Although I found examples of epistemic beliefs described in the epistemic cognition and historical thinking literature (King & Kitchener, 2002; Kuhn & Weinstock, 2002; Lee, 2004; Lee & Ashby, 2000; Lee & Shemilt, 2003), the same individual manifested beliefs that would be considered indicative of different developmental levels. Analyses of students' written responses to the BHQ also evidenced the same phenomenon. Hence, these findings suggest that individual epistemic beliefs may be viewed as a complex system, not necessarily characterized by a high level of integration.

In fact, about one third of student utterances reflected beliefs that the literature would describe in part as realist and in part as multiplist (TR1), with either label clearly inadequate to characterize the epistemic position of the individual. At the same time, the fact that only two adjacent categories (EBCO and TR1) captured the majority of the utterances suggests that student epistemic beliefs in history may still be conceived as a system characterized by a set of recurring, albeit not necessarily well integrated, ideas. Once again, analysis of written responses to the BHQ confirmed these trends, with few students obtaining high consistency scores. It may well be the case that high internal consistency of epistemic beliefs is a mark of domain expertise, a hypothesis already suggested by prior studies using a similar

instrument (Maggioni et al., 2004) and compatible with results of developmental studies of epistemological thinking (Kuhn & Weinstock, 2002).

This phenomenon of epistemic inconsistency is not new in the developmental literature. Researchers investigating the development of epistemic cognition through the analysis of open or structured interviews reported that they observed it in their participants. For example, Perry (1970) conducted yearly open interviews with college undergraduates, during which he aimed at understanding the meaning that students gave to their experience. His study is often cited as pivotal for research in epistemic cognition and his scheme is constituted by a sequence of epistemic “positions.” Perry created these positions by ordering along a developmental path the stable “forms of those assumptions about knowledge and value with which [the student] construed his experience” (p. 47). Explaining the method that he followed in developing his scheme, Perry reported about the emergence of different developmental positions in the same individual. I cite the footnote addressing this issue at some length, because I believe that it speaks directly to the point that I am discussing and because Perry was very influential in tracing the path followed by mainstream research in epistemic cognition in the years that followed:

Since students often seemed to interpret different sectors of their experience through structures of different developmental status [i.e., structures that Perry would attribute to different “positions”], the concept of a central tendency or dominant structure was essential to the judges’ task of rating student reports as “overall” at a single position. We made only one test of the possibility that the judges rated each interview in five content-sectors [...] In rating the four

interviews of one student's four-year report, the judges rated each interview in five content-sectors (academic, extracurricular, interpersonal, vocational, religious), and also "overall." The judges produced reliable ratings for each of the five sectors and these ratings revealed a considerable disparity in the student's development from sector to sector, especially in his outlook toward academic work and religion as compared to his outlook toward his career (p. 48).

Why did Perry opt for assigning each individual to an "overall" position, when the ratings of the different sectors showed remarkable differences? The footnote provides his rationale:

Nonetheless, the reliability was no greater in the rating of separate sectors than in the overall rating of the central tendency among them. Possibly the smaller amount of data available for any one sector counteracted the advantages of focus. Whatever the reason, the expense of rating by sectors appeared too great for our purposes, and we settled for the equally reliable overall judgment as a workable tool in the first test of our scheme (p. 48).

In so doing, Perry created a clean description of epistemic development and maintained a high interrater reliability. To be sure, his scheme allows for alternatives to a linear growth, and includes the possibility that individuals temporize, retreat, or escape the developmental trajectory. Yet, I believe that something got lost in the process of abstraction. Researchers could now "make sense" of individual epistemic development and trace its course. However, in assigning an "overall score" to each individual, this approach probably fostered a conceptual shortcut, in which average or

median scores were taken as valid indicators of an individual's epistemic position at a certain moment in time. With the exception of few studies aiming at capturing cross-domain epistemological positions (e.g., Buehl, Alexander, & Murphy, 2002; Kuhn, Cheney, & Weinstock, 2000), the diversity across contexts got lost.

Developmental researchers have been aware of this risk. For example, in summarizing their research on the Reflective Judgment Model and reporting that they found some degree of epistemic inconsistency also among their participants, King and Kitchener (2002) noted that "variability of stage reasoning (that is, evidence of reasoning that is characteristic of more than one stage at a time) was the norm" (p. 45). They likened epistemic development to the movement of waves, which spread across different stages and tended to change their shape, in time. For this reason, they cautioned against characterizing individuals as being "in" or "at" a single stage.

The results of this study support these findings and suggest that epistemic inconsistency may characterize also domain-specific beliefs, especially when individuals are still on their way toward expertise. Yet, how can "inconsistency" be assessed? Besides requiring some degree of creativity on the part of researchers, addressing this issue will imply the specification of some normative epistemic standard (inconsistent in relation to *what?*), especially if the goal is tracing epistemic development. The creation of a consistency score to analyze written responses to the BHQ is a rough, initial attempt in this direction.

The decision to assess consistency in relation to the criterialist stance, and more generally, to assess individual development in relation to it, depends on the

compatibility of this stance with the possibility to think historically and with the goals of an education to criticism. On the other hand, beliefs characterizing the copier stance do not foster an awareness of the role of the knower in the generation of historical knowledge and thus dissolve the idea of an historical thinker. Criticism of what is handed down as historical knowledge by authorities is reduced to some marginal aspects of it or becomes altogether meaningless. Beliefs characterizing the subjectivist stance also do not foster historical thinking or a truly critical attitude, because they convey the idea that there is no method or criteria that can help individuals to evaluate what is proposed as historical knowledge or to further develop their knowledge of the past. Without such method, the relation with the traces of the past is severed, the possibility of evaluating justifications for beliefs about the past becomes impossible, and a sterile doubt of any beliefs about the past takes the place of criticism.

The Role of Context and Tasks

The analyses of participants' structured interviews may provide a few insights about why epistemic inconsistency comes to characterize history-specific epistemic beliefs. For example, in responding to the statements of the BHQ, students and teachers often referred to specific occurrences, such as archeologists' findings, dinosaurs' bones, different perspectives about particular events, school fights, car accidents, eyewitnesses' truthfulness, and research experiences. In other words, they referred to their experiences in school and out of school to justify their beliefs. These situations guided their reflection on how knowledge is generated. Thus, in thinking about the unexpected discovery of an archeologist, students concluded that historical

knowledge was “found,” while, in thinking about the different accounts produced after a car accident, they thought of knowledge as hopelessly subjective. In other words, the context suggested by the items or the one that participants envisioned when responding to items worded in abstract terms seemed to influence their thinking, deeply.

This instance has consequences for research and for pedagogical practice. Specifically, if the effect of context can be so powerful when focusing on domain-specific epistemic beliefs, can it also contribute to explain the difficulties faced by researchers trying to assess general epistemic beliefs? Researchers have often questioned the factor structure of these measures, the low variance explained, and especially the low reliability of the scales and tried to ameliorate the problem by identifying subsets of highly correlated items for each dimension of epistemic beliefs. Yet, in so doing, researchers have assumed epistemic consistency across contexts and tasks. The results of this study suggest that this may not correspond to the phenomenon observed.

In addition, context may act as a powerful confounder and affect what is actually assessed by a scale. For example, the EBI’s questionnaire (Schraw et al., 2002, p. 267) infers individual beliefs about the certainty of knowledge from items referring to the general applicability of moral rules and to the stability of truth. Would individuals respond in the same way if prompted to think about the general application of the laws of physics or the stability of biological knowledge? The results of this study suggest that this might not be the case, questioning the validity of the constructs assessed with these instruments.

Hammer and Elby (2002) also challenged the assumption of epistemic consistency and argued for a change in the way researchers conceptualize the nature of personal epistemology. They too highlighted the role that context plays in the activation of different (epistemic) resources. For example, they observed that, if asked how they know about what will be served for dinner, children may answer that they know it because their mom told them so; in so doing, they seem to access the idea of “knowledge as propagated stuff.” However, if asked how they came up with a certain story or game, they may say that they “made it up,” suggesting the reference to the idea of “knowledge as free creation.” The results of this study support the hypothesis that individuals can access different ideas about the nature of knowledge and knowing and that contexts and tasks influence what idea will be manifested.

In regard to pedagogical practice, these findings highlight the importance that student prior experiences, tasks choices, and examples or metaphors discussed in class may have for the development of epistemic beliefs. In other words, although being mostly correlational in nature, research has usually tended to interpret study results in terms of the role that epistemic beliefs may have on how students perform on specific cognitive tasks (e.g., text processing; development of arguments). The results of this study highlight the influence that exposure (or lack thereof) to certain problems and tasks may have on the development of epistemic beliefs. Hence, acknowledging and critiquing students’ prior ideas and exposing students to the problems and practices typical of a certain domain of study become crucial for the development of epistemic beliefs compatible with the generation of knowledge in that domain.

The mere comparison of conflicting sources does not seem to foster the development of those criterialist beliefs that tend to characterize experts in history. Whenever such activities are not situated within a learning experience in which disciplinary criteria are explicitly taught and discussed, individuals tend to rely on everyday criteria (e.g., majority rule; reliance on unchecked prior knowledge) that fall short of enabling them to build meaningful knowledge in this domain. In this respect, acknowledging the role that contexts and tasks play in what kind of epistemic beliefs will be more easily prompted might shed some light to why this may be the case. Historians' investigations involve much more than comparing and contrasting sources. Although a serendipitous finding may sometimes prompt a new investigation, the historian's question deeply informs the research process without discounting the influence that the results may have on the direction of the inquiry. Thus, if students are not helped to recognize that historical knowledge is generated not only because of new findings but also because of new questions being asked (an experience shared by historians), it will be very unlikely that they become able to fully value the subjective aspect of historical knowledge without, at the same time, getting stuck in a naïve, helpless relativism.

Unfortunately, students are often required to produce answers on the basis of given data, but they are rarely asked to generate questions. Specifically, class observations and analyses of teachers' interviews showed that students engaged mostly in tasks that did not require a view of historical knowledge as generated through a dynamic relation between a knower and the archive. They focused alternatively on the interpretive aspect of history (e.g., point of views) or on the

analysis of sources (e.g., understanding subtext, identifying the author) and gathering of “information”.

When the interpretive component was addressed, the task mainly solicited the opinion of the students; to respond to this kind of tasks, multiplist beliefs may be adaptive. Conversely, when the “evidence” component was addressed, the task usually presupposed a fixed answer, which the students had to identify in the source or that they had to remember from prior readings and lectures; in this case, realist beliefs may serve the students well.

Since epistemic beliefs were rarely openly addressed, students could entertain sets of inconsistent beliefs without feeling the need to come to a more integrated epistemic position. In this respect, for a few students like Juliet and Chris, the structured interviews and the work on the CRT tasks seemed to set off the need for such change, potentially transforming observational tools into intervention instruments. More generally, these instances indicate that prompting students to think about epistemological issues may affect their beliefs. In fact, in several cases, once prompted to reflect on the interpretive nature of history, students and teachers tended to move toward subjectivist positions. At the same time, Juliet’s case indicates that, although change of specific epistemic beliefs may be stimulated quite easily by their direct discussion, the shift to a new epistemic stance probably requires repeated and purposefully designed exposure to these ideas and occasions to consider their implications for one’s overall beliefs system.

In line with findings from the conceptual change and persuasion literature (Alexander, Murphy, Buehl, & Sperl, 1998; Chinn & Brewer, 1993), interventions

aiming at fostering epistemic change need to address prior ideas that may hinder epistemic development and provide convincing alternative ways of thinking about the issues that students perceive as problematic (e.g., need to rely on eyewitnesses' accounts and awareness that they may not tell the truth). Failure to do so might likely result in students espousing conflicting ideas, an occurrence that I found reflected in several utterances coded as TR1. In this respect, the descriptions of key ideas characterizing different epistemic positions offered by this study may be particularly useful for educators that aim at fostering epistemic development.

Finally, the role that context and task may play in the development of epistemic beliefs is also suggested by the differences in the range of and in the changes in epistemic beliefs and behaviors indicative of historical thinking. Specifically, students tended to differ much more markedly in terms of epistemic beliefs than in regard to historical thinking. Although the statements of the BHQ referred to beliefs about the nature of historical knowledge, students referred multiple times to out of school occurrences. Conversely, they tended to refer to tasks and strategies acquired in school in working on the CRT tasks. In other words, it seems that a more diversified array of contexts (including out of school contexts) tends to play a role in the development of epistemic beliefs, while historical thinking is mainly influenced by what happens within the academic setting, a finding in line with research exploring the influence of sociocultural factors on epistemic beliefs (Tabak & Weinstock, 2008).

Ideas Hindering Historical Thinking

In examining the epistemic ideas voiced by the participants in this study and their written responses to the CRTs, I found that the results confirm and extend the progression proposed by Lee and Shemilt (2003); specifically, the idea of evidence as granting direct access to the past, the identification of evidence with information, the issue of witnesses' reliability and the consequent necessity of coming to an understanding by putting together the most convincing pieces of their testimonies, and the helplessness in front of irremediably biased sources that justifies the view of history as opinion.

The results of the study also indicate that the relation between history specific epistemic beliefs and historical thinking is a complex one. On one hand, some students seemed to progress differently in terms of epistemic beliefs and historical thinking. For example, in discussing the statements of the BQH, most of them acknowledged the subjective component of historical knowledge, yet, while working on the CRT tasks, only rarely did they seem to be aware that texts have authors. More generally, as discussed in the prior section, the range of their beliefs was broader and the changes more evident and varied than their behaviors in terms of historical thinking. The different context in which students were used to encounter these ideas and tasks may contribute to explain this difference.

Teachers' data further caution from assuming a neat parallelism between progression in epistemic beliefs and in historical thinking. For example, in working on the CRT task, Ellen demonstrated several traits that typify historical thinking; confronted with a specific task, she was able to use the sources provided to build

evidence. Yet, this approach did not completely align with the rationalization of historical knowledge that Ellen provided during the structured interview. By contrast, Danielle often voiced criterialist beliefs, but seemed unable to fully take advantage of those criteria in working on the CRT task. At the same time, Danielle demonstrated being capable of identifying and using primary sources to build the historical narratives that she shared with her students during her lectures.

These occurrences suggest that full consistency not only across beliefs but also between epistemic beliefs and their implication for generating historical knowledge remains a mark of expertise. They also support the hypothesis that context plays a role in the activation of epistemic resources (Louca et al., 2004). Thus, the beliefs that individuals verbalize while pondering hypothetical situations may not necessarily be the same that guide their thinking when confronted by specific tasks. Measurement issues aside, the low amount of variance usually explained by epistemological variables in terms of various learning outcomes may further support this hypothesis (Wood & Kardash, 2002).

On the other hand, the majority of the epistemic beliefs voiced by the participants in this study seem congruent with the ideas that shaped their ability (or lack thereof) of thinking historically while they completed the CRTs. The rest of this section will specifically discuss these ideas, since they appeared to influence, and often hinder, students' ability to think historically.

The first of these ideas regards the conceptualization of texts as communications from an author. In terms of historical thinking, such conceptualization prompted Chris's revision of his interpretation of the document

authored by Mark Twain and encouraged Mark's considerations of different perspectives. I also found that it was triggered for Monica when the text was written in first person. Conversely, lack of such awareness was at the root of using references merely for answering ad hoc questions. The idea of an authorless text is congruent with the view of knowing described by the Copier category and also by the Transition 1 category, in as much as the historian is conceived as a chronicler (or "wannabe" chronicler).

Epistemologically related to the idea of an authorless text and similarly problematic is the conceptualization of historical fact as something established independently from a historian, or of text as information. Approached in this way, texts are not invitations to participate in a conversation, but, at best, they are tickets to a lecture. The prevalence of copier and transition 1 beliefs among the participants may thus explain why students appeared overall passive in front of the texts they read while working on the CRTs. Their behavior strongly resembles what was described by Penrose and Geisler (1994) in a study comparing college freshmen, Janet, and a graduate student, Roger. Asked to write a paper summarizing and explaining different views of paternalism after having read a set of diverse contributions on the topic, these researchers noted that, similarly to the students in this study, Janet rarely referred to the authors of the texts, read the texts as together making up a single source of information, and saw her task as one of extracting true facts from the texts, although, in her case, several of the texts presented their claims in argumentative form. Although reflective and able to state her stance on the topic of the readings, Janet didn't ascribe to herself any kind of authority in testing the authors' claims; she

faced the texts as an outsider and was therefore very uncomfortable when confronted by disagreement among the authors. Again, similarly to several students in this study, her strategies to face conflict comprised reporting the different views, borrowing one of the stances available, or dropping those aspects of the issue for which she was unable to reach a determination about the “correct” position.

Another idea that emerged when analyzing the data is a conceptualization of opinion as personal belief devoid of any grounding in evidence. A characteristic of the Subjectivist category of epistemic beliefs, this idea was also present in Transition 1 (TR1), whenever the remnants of the past became debatable or problematic. From the historical thinking point of view, this idea may legitimate the intrusion of external elements in the form of unhelpful elaboration of the texts that I found quite often and interpreted as instances of Historical Thinking No (HTno). This idea may also foster a distorted conceptualization of perspective as inherently biased and thus favor an attitude of generalized suspicion that may at times be mistaken and encouraged as a critical stance (Wineburg, 2007). Taken together, an authorless view of text and a dichotomous view of knowledge as either fact or opinion seem congruent with the Cut and Paste approach that I observed so often across participant students and that misses the mark of historical thinking in so many respects.

Finally, the lack of powerful heuristics and of reading strategies appropriate for dealing with multiple texts constrained the ability to think historically even when the students demonstrated some instances of beliefs compatible with the criterialist stance (e.g., Mark). I believe that this occurrence highlights the key role that schools

are called to play in this respect, as it is quite unlikely that these abilities develop independently from formal education.

Conversely, in a few cases, familiarity with some of the heuristics characterizing experts' thinking did not necessarily correlate with views of history suggesting expertise. For example, some students and teachers demonstrated understanding of some of the disciplinary tools and criteria for historical inquiry (e.g., sourcing and contextualization), but they still seemed to equate history and chronicle. They "questioned" the sources to discriminate between facts and opinions and to corroborate across them, but I found little evidence that students (and teachers, for the most part) were aware of the role that the historian's question may play in the generation of historical knowledge; a result in line with the findings of prior research with high-school students and teachers (e.g., Wineburg, 2001a).

Relations among Teachers' Variables

Teachers' pedagogical practices were overall consistent with their stated goals, which seemed to play a key role in teachers' decisions. Ellen strove to make history "real" for her students by making them reflect upon the conditions in which people lived at a certain time and in a certain place, by showing video clips, and by assigning tasks that fostered empathy and contextualization. Lauren underscored connections between events and similarities across time, providing her students with a clear narrative, but also integrating it with several anecdotes and particulars. Danielle tried to foster a personal connection between the students and the past and a clear awareness that history tends to repeat itself. She did so by prompting the sharing of personal experiences and by highlighting connections across time.

Yet, these goals seem often at odds with the nature of historical knowledge as perceived by the disciplinary community. Let's take, for example, the idea of making history "real," a goal mentioned in one fashion or another by all teachers. For historians (and this tradition goes as far back as Thucydides) history aims at *understanding* the past and not at reliving it; it does so with the benefit of hindsight that comes from living in the present. Although empathy may keep presentist temptations at bay, knowledge of what happened in-between the "real" past and the present is bound to affect our perception of the past (Lowenthal, 2000, p. 78). Even an historian like von Ranke, who wrote in his famous preface to the *Histories of the Latin and Germanic Nations from 1494-1514* that the purpose of his work was "to show what actually happened (*wie es eigentlich gewesen*)," stated in the same preface that "[t]he purpose of a historian depends on his point of view" (Stern, 1956/1973, pp. 55-58). Even more clearly, Marrou (1954/1988) observed that when it was "real", what we today call "the past" was something different for those who experienced it. For them it was the present, characterized by the same confusion, multiplicity, and unintelligibility that characterizes our present (pp. 35-38).

By comparison, introducing students to the analysis of primary sources appears a goal well in line with disciplinary practice. All participant teachers included this goal, often adding that introducing students to the use of primary sources was very important for them. On a personal level, all teachers were also interested in historical investigations and had carried out some form of historical inquiry in pursuing their personal interests. Yet, none of them listed the development of historical thinking among her goals. Consistently with the teachers' stated goals,

primary sources were mainly mentioned as potential aid for fostering interest, personal connections, and, more generally, to convey a sense of the “reality” of history. Several of the practices that teachers used in working with primary sources were also similar and probably a reflection of the common way in which they conceptualized their potential benefit for pedagogical practice.

Another practice with important pedagogical implications for the development of student epistemic cognition in history is the introduction of multiple perspectives (through lectures or tasks). As in the use of primary sources, the goal that teachers explicitly or implicitly tended to achieve shaped the meaning of this practice. For example, all teachers assigned tasks that exposed students to multiple perspectives. These tasks usually aimed at fostering student ability to take a side and provide factual support for their choice; they might also have prompted student analysis and elaboration of the texts, and thus facilitated retention of information. Yet, these tasks also introduced the false perception that there are always (and only) two sides of every issue. When illustrating different perspectives (in their lectures or by assigning different texts), teachers tended to reinforce this perception by usually bringing to the students’ attention only two points of view. This choice might have been prompted by lack of time; yet, it often seemed to become the default way of taking perspective into account, an approach again at odds with disciplinary practices. In addition, it fostered a very specific kind of argumentation: dispute.

Felton (2009) defined dispute as a kind of argumentation whose “goal is to win the argument.” In this respect, this kind of arguing is compatible with the goals that teachers articulated in explaining the criteria they would use in evaluating student

essays and with the conceptualization of perspective as “taking sides” that is epitomized by the use of T-charts as graphic organizers for summarizing multiple sources. Yet, once again, this way of thinking is quite contrary to historical thinking because it promotes the use of criteria that conflict with the ones that guide the generation of historical knowledge. Felton’s definition aids understanding of how teachers’ conceptualization of the role of multiple perspectives in history might have influenced their use and their students’ use of evidence. In disputes, alternative claims and evidence that do not serve one’s argument need to be explained away or ignored. From an epistemic point of view, this approach is compatible with beliefs often emerging in the interviews and characterizing a transition 1 stance. On one hand, dispute highlights the need of grounding one’s claim in evidence, yet, on the other hand, personal opinions decide which evidence should be picked, and which discarded. In terms of historical thinking, it is well illustrated in the Cut and Paste approach that so often characterized student performances on the CRT task.

Yet, as researchers exploring other kinds of argumentations pointed out, dispute is far from being the only way of arguing, nor it is necessarily the most effective one to address complex issues (Felton, 2009; Kroll, 2005; Makau & Marty, 2001). In particular, the latter consideration suggests that dispute is unlikely to foster that consideration of the evidence and that process of evaluation particularly desirable for thinking historically. Other approaches to argumentation would seem more promising, in this respect. For example, deliberation focuses on the problem addressed, and examines all claims and evidence that pertain to the issue with the goal of building a consensus view able to deal with the problem at hand. Within this

approach, claims need to be based on a disciplinary use of evidence, which means that claims are advanced and evaluated according to the criteria specific to the discipline; a process that seems better aligned with the goals of promoting the development of historical thinking and criterialist epistemic beliefs. It is probably not by chance that this was the approach followed by Vansledright (2002) with his fifth graders. Although theoretically promising, I did not find evidence of this goal (nor of this practice) in these case studies and thus, I cannot test this hypothesis, which I need to defer to future research.

The instance that teachers differed in several respects, including their epistemic beliefs and their ability of thinking historically as demonstrated on the CRT task, suggests that the school-system—the one in which the teachers worked, but also their prior and, in the case of Lauren, current experiences as learners—may be a strong influence in the development of these ideas. In this respect, Lauren offered the clearest example. Although she was aware of the interpretive nature of history, as demonstrated during her evaluation of the BHQ's statements, history became a fixed narrative in the high-school classroom context and she did not mind to concentrate on the “bare bones” of factual information. In Lauren's specific case, it is also possible that this impression was corroborated by the style used in her graduate history program. This sort of “epistemic double standard” is not new in the literature and has been reported both in the sciences and in history (Hartzler-Miller, 2001; Kang & Wallace, 2004; Laplante, 1996). The fact that all teachers tended to focus more squarely on substantive knowledge toward the end of the semester also lends support to this hypothesis.

Yet, considered in its entirety and in comparison to Ellen's and Danielle's data, Lauren's interview suggests an additional factor that might strengthen the influence of context. Specifically, in evaluating the BHQ's statements, Lauren acknowledged the interpretive nature of history and the role of evidence, but she also showed an overall lack of clarity about how the historical method could facilitate the integration between objective and subjective aspects of historical knowledge. Performance on the CRT also suggested the lack of such method. Similarly to many students, Lauren approached the documents as independent texts. Thus her prior, unchecked knowledge became the main interpretive tool for picking and choosing among the "information" offered by the texts. It is in this situation (shared by many novices) that the perception of knowledge favored by the specific context (generated vs. transmitted) comes to play a major role in determining what view of knowledge gets activated (Louca et al., 2004). Danielle also seemed to refer to different views of historical knowledge, according to whether she was the reader of somebody else's historical accounts or whether she was the historical inquirer.

Finally, teachers' responses to the interest questionnaire also suggest that teachers perceived themselves more as consumers of histories written by others than as participants in its construction. In this respect, Ellen was an exception, reporting a relatively high degree of involvement also in activities that presupposed active participation in the process of historical inquiry. In particular, she was the only teacher who perceived herself as serving as a historical authority or resource very often, thus challenging the separation between history as a discipline practiced by professional historians and history as subject matter taught in schools. Her freedom

in sharing her point of views on the topic examined in class may be a reflection of this understanding. Yet, Ellen's overall attitude toward history and her capacity to think historically were not enough to make her give priority to the development of historical thinking in her goals and in her pedagogical practice. When I asked her about the degree of freedom or the constraints she felt in her practice, she mentioned the need of "playing catch up" with other classes, which apparently were ahead in terms of "coverage":

So, the huge constraint is, right now, I should be probably in the 1920s and getting into the Great Depression and the New Deal; and we are racing now to get to the '20s. We are trying now to do WWI in two days: "Hey, sum it up, four years of war, two days, we can do it" [laughing].

At the same time, Ellen was also willing to take her time and slow down with her plans if she had the impression that her students looked lost or uninterested, because it was very important to her that "the kids are getting it." Yet, for Ellen, "getting it," meant

that they are making the connections, that they understand what I am saying, that I am presenting it clear enough for them to understand. That something clicked inside and they are going: "Oh, I'm getting it now, I see why the U.S. did this," or "I see what was happening and I understand that there are problems in Europe, to put it mildly, that's why the whole idea of nationalism and the fact that it became having alliances that could support each other." That they can make those connections: that if your friend gets attacked, you are gonna go after the person who attacked your friend.

Her sensitivity toward the specific needs of her students notwithstanding, also in Ellen's case the main goal remained expressed in terms of internalizing someone else's story.

Overall, the results strongly suggest that the goals that teachers set and especially the way in which they conceptualized them played a major role in the decisions they made and in the pedagogical meaning they attributed to specific tasks. School-system's specific constraints aside, the way in which teachers conceptualized the nature and the justification of historical knowledge, but, more precisely, of history as a subject matter taught in schools seemed to be a major influence in teachers' goal setting. I will further discuss this connection in the next section, in the context of the relations between teachers' practices and students' epistemic development.

Relations among Teachers' Practices, Students' Epistemic Beliefs, and Students' Capacity to Think Historically

On one hand, the analyses of the findings suggest that the history classroom played an important role in shaping some of these students' epistemic beliefs and their approach to the study of the past. In the following sections, I identify a few of these ideas and attitudes and suggest potential connections with practices I observed in these classrooms. Table 5.1 summarizes a few of these connections and compares ideas emerged in the context of these three classes with ideas widely shared by the disciplinary community. On the other hand, the same analyses also indicate that other contexts, beside the school, may play an influential role, especially in regard to the development of epistemic beliefs. For example, students referred to what they experienced with school fights and car accidents. Kalyna and Mark referred to their

Table 5.1

Relations between Pedagogical Practices and Teachers' and Students' Ideas about History and Its Justifications—Comparisons with Experts

	Teachers' Beliefs and Criteria	Pedagogical Practices	Students' Beliefs and Criteria	Experts' Beliefs and Criteria
Purpose of history	History makes the past "real".	Use primary sources or videos of those "who were there".	Seeing is believing Videos and technology "produce" historical knowledge Primary sources can show the past.	Understanding the past with the benefit of hindsight.
The content of historical knowledge	History makes connections across time ("rescuing" the best narrative)	Transmission of a single, clean narrative through lectures, recitation, notes, graphic organizers. Questions as rhetorical (or rehearsing) devices.	"Being good" at history means knowing information about the past and learning logical connections among events	Understanding complex relations of cause and effect, continuity and change (multiple narratives). Questions as springboard and tool for historical inquiry
Where does historical knowledge come from?	History is in the sources; the problem lies in interpreting them well.	Identification of perspective and subtext to discriminate between facts (to be retained) and opinions (to be discarded). Once a narrative has been derived, the problem is that students "get it".	Texts are perceived as authorless. Surface level reading strategies are used to get at the "information" or at the main idea. Information from different sources can simply be pasted together. Eventually, subtext is used to identify and reject biased sources.	History begins with a question (asked in the present), addressed through the remnants of the past, and is generated through the reciprocal influence of the historian's question and the archive.

Justifications of historical knowledge	Arguments are decided a-priori and evidence is selected to buttress them.	Argumentation as dispute. Perspective is equated to taking a side (usually between two different ones).	Reliance on unchecked prior knowledge. Majority rule.	Arguments are framed after critical evaluation of all the evidence, a process that includes sourcing, corroboration, and contextualization. Inasmuch as possible, prior beliefs are suspended while the historian “listens” to the source. Singularity in perspective is a value and not a reason for dismissal.
Reliability	Reliability is an intrinsic property of a source.	Discriminate between biased and unbiased sources. Take sides – T-charts.	Reference to unchecked prior knowledge or authority to evaluate the credibility of a source. Dismissal of sources perceived as difficult, biased, or expressing a view not compatible with the majority of sources.	Reliability established in relation to a historical question.

discussions about the validity and certainty of knowledge within their families, in connection with cultural and religious issues. The design of the study does not allow me to deepen further this (fascinating) line of inquiry; the following considerations are thus limited to the context of the history classroom.

Seeing is believing. In expressing the idea that history and the past coincided, several students concluded that evidence was generated directly by some remnants of the past, leaving no role to the knower. In these cases, they especially referred to videos and the potential role of technology in providing a seemingly inexhaustible flow of evidence, able to show us the past. This belief might have been prompted by prior experiences, both in and out of school; in fact, together with videos, students cited dinosaur bones and Egyptian mummies. Yet, videos, pictures, and texts were used in the classes that I observed to convey a narrative that was left unchallenged. More or less explicitly, these media were also treated as a primary source that did not need any interpretation.

To be sure, Ellen, Lauren, and Danielle used videos in their respective classes in a different way and with a different frequency (e.g., Ellen tended to sparingly use short video clips, while Lauren and Danielle tended to show long sections of documentaries and, in some cases, an entire episode). Yet, for the most part, these media were treated as conveyors of information. The questionnaires (or list of facts) that students were asked to complete while watching documentaries are an example of this approach. In addition, during lectures, primary sources tended to be used to illustrate (prove?) a narrative. Numerous activities and tasks asked students to use

primary and secondary sources (quite indifferently) to extract information, or rehearse information.

Although with different tones, all teachers expressed a desire to make the past meaningful for their students and saw in the introduction of primary sources a potential venue “to make it real” for them. This approach may have fostered the ability of the students to contextualize their thinking, as exemplified by their responses to tasks that asked them to imagine the conditions of a particular individual at a particular time and place (e.g., write a letter home, describing your homestead on the prairie). Yet, it also reinforced epistemic beliefs that were not conducive to thinking historically, as the student performance on the CRT tasks illustrated (e.g., taking potential documentary evidence at face value; extract and link together snippets of texts).

Bias. During the structured interviews, students often referred to the possibility that sources were biased and witnesses and historians may be biased. They endowed this word with a morally negative connotation and tended to associate its presence with the impossibility of knowing the past as it really was. More generally, students were often unable to assign a positive role to the knower in the generation of knowledge and generally clung to the belief that, ideally, truth should be reached with no mediation (“the facts”). Further, they tended to oscillate between a conception of an absolutely passive knower (e.g., by taking authorless texts at their face value) and a conception of knower as arbitrarily subjective (e.g., by constructing answers based on first impressions, unchecked prior beliefs, and free elaborations).

A misconceived understanding of the issue of perspective seemed to play a fundamental role in this struggle. The words bias and perspective (or points of view) were often used as synonyms in the classes that I observed. Similarly, facts and opinions were presented as dichotomous terms. When different accounts were compared, the problem tended to be cast in terms of identifying the less biased and thus “better” source (e.g., comparison between two historians’ account about the Pullman Strike, in Danielle’s class). Finally, respect for student opinions tended to mean granting a space free from the need of providing warrants for one’s reasoning (e.g., discussion about the war in Iraq, in Lauren’s class).

From an epistemic point of view, talking about bias as a necessary evil (at best) or as an evil tout court (at worst) implies the idea that knowledge should be somehow impersonal, a position well compatible with the two stances (Copier and Transition 1) that emerged as prevalent across the student participants. Similarly, stressing the dichotomy between facts and opinions implies the existence of some core knowledge independent from any knower, an epistemic position that likely leads to a cognitive impasse whenever the sources at one’s disposal are eventually perceived as biased.

Authorless texts. In terms of building understanding, students mainly treated the texts they encountered as authorless data banks. Although they sometimes used personal pronouns (e.g., he or they) in paraphrasing their content or even when they questioned repeatedly the trustworthiness of the documents, they seemed to lack appropriate, domain-specific heuristics, such as sourcing and corroborating, to address the questions they raised.

This attitude toward text is especially problematic in history, because most testimonies about the past come in the form of written texts and the outcome of historical inquiry is usually conveyed in writing, too. Thus, considering the content of a historical account detached from its author impeded the possibility of evaluating it critically and thus using it for building knowledge and understanding. Yet, when compared to the tasks and activities that students performed in their classes, their overall attitude toward texts is not surprising.

In most cases, students were asked to read texts with the purpose of gaining information, “getting the content,” or otherwise “covering” the topics in the curriculum. In the junior classes, teachers expected students to read the texts quickly and to find answers to questions in a short amount of time. In the freshmen class, additional support was offered. However, texts tended to be taken at face value and the focus was on fostering the acquisition of various strategies to gather, connect, and elaborate information from texts. To be sure, teachers sometimes asked students to analyze a particular source (e.g., using the APPARTS strategy, in Danielle’s class). Yet, the impact that these analyses might have had on the overall understanding of the content of the source was not made explicit. Conversely, the overwhelming preponderance of class discourse implied a view of texts as conveyors of information, a view repeatedly reinforced by the assignments that students completed and by the kind of historical knowledge assessed by quizzes and tests.

Reduced heuristics. Considering the little practice students had in investigating historical questions on the basis of multiple texts, I was impressed by the effort that most students were willing to place in struggling with the texts

provided for the CRT tasks. In a few cases, they also demonstrated to be mindful of the context in which the events took place, a result that I found encouraging, considering that teachers dedicated a particular attention to fostering this attitude. Yet, an overall shallow conceptualization of the heuristics that can aid historical inquiry prevented students from gaining a full understanding of these texts. For example, most students demonstrated to be aware of the “information” provided by the various parts of a reference, probably because, when reading primary sources in class, they were often prompted to report in their analysis worksheet the name of the author. However, despite the good intentions of their teachers in introducing primary sources in the curriculum, for these students considering the source of a text fulfilled mainly the function to fill in a column in a worksheet.

In few cases, knowledge of an author affected student interpretation of a specific text. Yet, even when students questioned the trustworthiness of texts (e.g., Mark), they remained for the most part unable to use the clues contained in the references to address these issues and to move beyond a straight acceptance or rejection of an entire text (e.g., Chris). A possible justification of this behavior was suggested by Mark, who, alone among these participants, during the think aloud kept questioning how these authors knew what they were affirming in the documents. Once he completed the task, I asked him why, although he kept posing these questions about the trustworthiness of the documents, he never looked at the references. Here is his answer:

I don't know, there is really never an emphasis placed on checking your sources, because in high school there is a textbook. Obviously, I mean, once

in a while you run across a teacher that says maybe the textbook is wrong, but that's still a maybe, so...

Students also demonstrated to be aware of the need of comparing different texts. However, applied as single strategies, without students' understanding of their role in fostering historical understanding on the basis of multiple texts, these procedures bore little resemblance to the sourcing and corroboration used by more competent or expert historical thinkers. Rather, these strategies became useful only to answer ad hoc questions on tasks that specifically directed students to date or to name the author of a source, or asked to compare and contrast the information provided by different texts (e.g., Eric). As prior research pointed out (e.g., Wineburg, 2001b), students seemed to expect that the answer to the question proposed by the task would emerge directly from the texts and not from the interaction between their questions *and* the texts.

Students also approached the reading of these texts as a set of independent sources, adding (at best) what they understood from one source to what they understood from another, but failing to read them as multiple texts (Afflerbach & Cho, 2009). To be sure, they interpreted these texts in light of ideas and prior understandings, which, often left unchecked, did not prove especially helpful. Yet, students did not bring to bear understandings built while reading one of the documents on the reading of another text. Thus, as a result of comparing and contrasting these texts, they needed to leave some parts out in order to build a common story (or remained unable to build a story, as Mark's second CRT

illustrated). With the exception of Ellen, teachers also seemed to use a similar approach in completing the CRT task.

This approach is compatible to the way in which students used multiple sources in class to address a specific question. In these cases, teachers tended to divide them in groups and used a jigsaw approach. As a result, each student read only one of the sources and relied on the report of other students to complete the task. Despite teachers asking students to talk to each other and share their understandings of the source assigned to them, most of the time students simply copied from each other the conclusion that each one of them drew after reading a specific source. The structure provided by the worksheets that usually accompanied these kinds of tasks seemed to hinder an actual corroboration of the sources, because students tended to focus on filling in the boxes, rather than carefully reading and comparing the texts.

In addition, even when students were exposed to multiple perspectives and guided in the analysis of primary sources, they were not prompted to reflect on the meaning of these experiences. In other words, metacognitive awareness was rarely modeled or prompted, an approach in stark contrast with what suggested in the literature as promoting epistemic development and fostering historical thinking (Bain, 2000; Elby, 2001)

Cutting, pasting, and adding. In completing the CRT tasks, students felt quite free to retain certain parts of the texts and ignore others, while adding elaborations and bits of unchecked prior beliefs. The difference between this approach and the historical method is abysmal. However, students reported that they

applied this heuristic to complete similar tasks assigned in school and achieved success.

Why was this the case, when, with the exception of Lauren, participant teachers approached the CRT task very differently? One reason might have been embedded in the curriculum implemented in the school system in which I conducted the study. Although none of the classes that participated in the study were AP classes, one of the major goals of this school system was preparing students to take AP US History courses. Thus, the skills needed to successfully complete the AP classes were fostered throughout the curriculum (hence, the push for introducing primary sources). Unfortunately, the guidelines for completing the Document Based Question in the US History AP Exam seem to foster the approach to the texts that emerged from the data. In fact, in this test, students are required to demonstrate their knowledge of the topic beyond what can be gathered from the documents provided and they are not required to use all the sources in their answer (nor to justify why they chose to ignore some of them).

Moreover, in their daily experience, students were often encouraged to make connections to their prior knowledge and to make guesses (about the content of a text, about what they will read in the next paragraph or section, about “what will happen” in the narrative). These strategies were usually taught and reinforced with the purpose of educating active readers and learners and to foster logical inferencing. The results of this study suggest that adolescents quite naturally made connections with what they knew and what they were. However, not all connections acted as facilitators, nor was particularly helpful that students had been previously exposed to

a certain topic or period (e.g., the Middle Ages or the colonization of the Americas). As suggested by former studies, students' prior historical narratives tended to act as decoders and encoders of new knowledge (Létourneau & Moisan, 2004). Thus, when prior understandings were left unchecked, they gravely hindered the learning experience, as several examples included in the section describing Historical Thinking No illustrated.

Questioning. Though students clearly addressed the questions asked by the CRT tasks, the role that these questions played in shaping the reading of the documents seemed significantly different from the one that historical questions play in the work of experts. Specifically, the interplay between the original historical question and the texts, interplay that, in the case of historians, tends to generate further questions that may broaden, qualify, or refine the search was missing in the case of the students. Instead of a springboard, students seemed to use the question as a sieve, to sift useful from useless or confusing information. A profound difference between historians' and students' experiences may contribute to these results. Historians usually set for themselves what questions to investigate and so it is not surprising that awareness of the goal of their inquiry permeates their reading of the texts. Although they may be assigned a specific question for the purposes of a study (Wineburg, 2001c), historians bring to the task the experience gained in their professional career. In their classes, students more typically addressed rehearsal or comprehension questions that often presupposed a specific answer buried in the texts. The way in which participants addressed the questions in the CRTs seemed in line with this kind of prior experiences.

Epistemic responsibility. In responding to the BHQ statements, several students expressed discomfort in facing the possibility of being unable to reach a single, full knowledge of the past. Often, they clung to the idea that, with enough effort and perhaps a bit of luck, historians could “discover” the past. In addition, although they were quick in acknowledging the existence of different points of view and bias, students rarely expressed the idea that historical questions often do not regard matter of facts (when something happened, who did it, and so on), but issues of interpretation and identification of trends, causes, and significance.

In their classes, the latter kind of questions was often addressed in lectures and in readings from the textbooks. In these cases, students were expected to take notes, understand the relations identified by their teachers or their textbooks, and be able to reproduce them in some form or another. For the most part, their role was passive, and very much in line with the attitude characterizing the good consumers’ approach described by VanSledright (2008) as one of the mark of school history courses dedicated to facilitating the sharing of the young generations into a common collective memory of the past.

In addition, several of the questions that they were asked to answer in their homework or in class were factual, in nature; as Ellen rightly observed, the focus tended to be on the “what,” “who,” and “when,” but seldom on the why. In asking students to reflect on the issues examined, teachers mainly required them to be mindful of the historical context, but did not expose students to the work of building arguments based on evidence. Thus, the refusal of epistemic responsibility voiced by a few students takes on the contours of a coached choice and, as such, becomes more

comprehensible: lectures, tests, and exams seemed to establish quite clearly what could be considered acceptable historical knowledge. Why should students take the risk of being wrong, if experts have already figured out what happened?

CHAPTER SIX

CONCLUSIONS

Knowledge of the human being by the human being, history is perception of the past through a living, effortful, human thought; it is a synthesis, an unbreakable union of subjects and object. To those who are concerned or irritated by this necessity, I cannot but repeat: this is the human condition and this is its nature.

(Marrou, 1954/1988)

In this last chapter, I revisit the theoretical model and discuss what relations seem to be compatible with the results of this study. Figure 6 represents the results of these understandings. Then, I propose a few broader questions emerging from this overview and suggest a few pedagogical implications in light of these results.

The results of the study suggest that the relation between teacher epistemic beliefs and teacher capacity to think historically is complex. For example, Ellen demonstrated several traits typical of expertise during her performance on the CRT task; yet, analysis of her structured interview suggested, at times, epistemic inconsistency. The opposite seemed to happen in the case of Danielle. In contrast, Lauren's epistemic beliefs and her performance on the CRT task seemed to fit the developmental trajectory identified in the literature (e.g., Lee & Shemilt, 2003). For this reason, I added a question mark to the arrow that links these constructs in Figure 6.

In the case of students, I found several relations between their epistemic beliefs and their capacity to think historically. In particular, several of the impasses that students encountered in integrating the objective and subjective aspects of

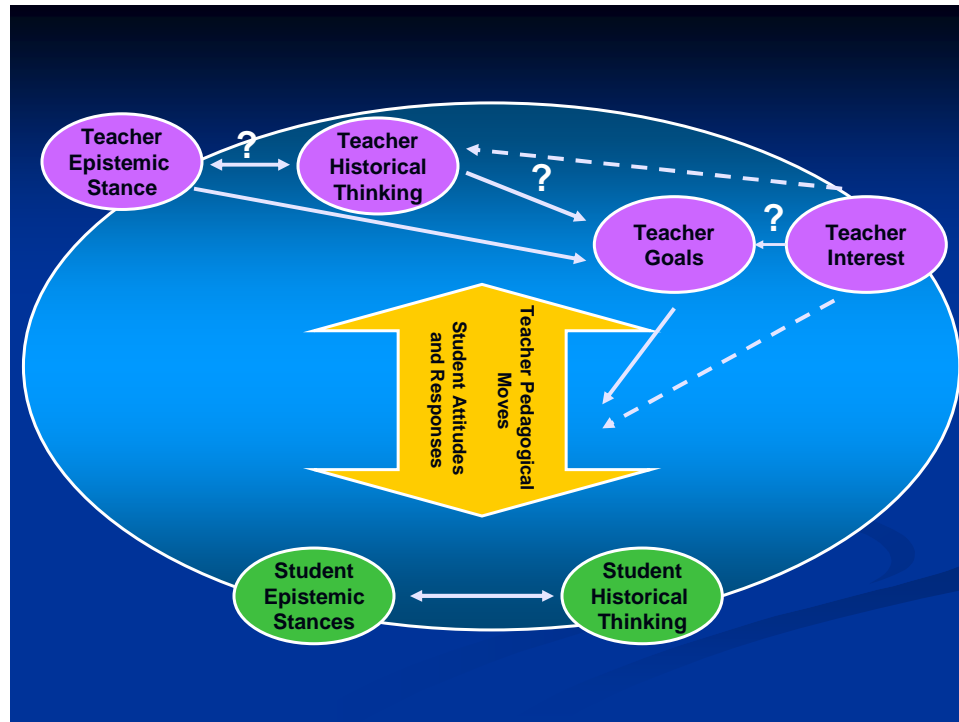


Figure 6: Theoretical Model Revisited

historical knowledge (e.g., the facts speak for themselves) seemed to be rooted in practices that hindered their capacity to think historically (e.g., treating texts as authorless; sharply discriminating between facts and opinions). Conversely, their epistemic beliefs, although for the most part compatible with their reasoning in history, tended to be more diversified and complex. In addition, even students manifesting a higher degree of agreement with statements reflecting a criterialist stance during the structured interviews appeared unable to refer to powerful criteria to build understanding during the CRT. This occurrence suggests that agreement with several criterialist beliefs, especially when not accompanied by an overall epistemic consistency, may be a facilitating, but not sufficient condition to think historically.

With this caveat, the double arrow that symbolizes a reciprocal influence between these constructs is confirmed in Figure 6.

Teachers' epistemic beliefs seemed aligned and compatible with teachers' goals; hence, I confirmed the arrow in Figure 6. Results of the study do not suggest that the same was necessarily true for teachers' capacity to think historically. For example, Ellen's capacity to think historically was not reflected in her pedagogical goals.

The influence of teachers' interest was ambiguous. While class observations suggested that teachers' general interest tended to inform their pedagogical practice (e.g., use of preferred documentaries or movies), their differences in terms of professional interest did not seem reflected in their goals. Yet, I found some moderate indication that teachers' professional interests might have influenced their ability to think historically, a result in line with the expertise literature (Alexander, 2003). After all, compared to the other two teachers, Ellen had the highest score on professional interest and had better performance on the CRT task. The dashed arrows signal these tentative, possible relations.

Teachers' goals emerged as the variable that most directly influenced teachers' pedagogical practice. What factors may have contributed to the development of these teachers' goal structure? When explicitly asked about constraints that they felt in their practice, teachers often mentioned factors related to the school system's context (symbolized by the light blue oval in Figure 6), such as issues of curriculum coverage, pacing guides and testing, and priorities given to push students into AP classes. In the case of Ellen, the composition of her class (i.e.,

freshmen who had been signaled by their middle school as challenged readers) aimed at postponing the State's government assessment for these students.

However, these more evident constraints may be only part of the story, because these three teachers demonstrated different sensitivities to their influence. For example, while Lauren and Danielle tried hard to follow the pacing guide, Ellen was willing to take the responsibility to sacrifice "coverage" in order to provide her students the time they needed to master a certain topic. Yet, for all three teachers, the final result in terms of goals was not historical thinking, but, as Ellen's put it, "getting it," which meant that students understood and remembered the connections among ideas and events emphasized in the narratives presented in class.

In this respect, I believe that the culture of the school-system at large played an even more influential role on teachers' goals than its specific constraints. In particular, I believe that system's culture constrained teachers' conceptualizations of what history in schools might look like, even in the case of teachers that had a few insights into disciplinary history. The language used by teachers was telling in this respect. Even when lamenting external constraints, they still framed the problem in terms of breadth of coverage (e.g., need "to do" WWI in two days), not in terms of the kind of thinking that the extant curriculum tended to foster. To be sure, teachers would have preferred to have more time to delve deeper into fewer historical issues; yet, for what purpose?

In respect to the purpose of history in the curriculum, controversy abounds even within the research community and, in a way, it is fostered by the very nature and power of historical knowledge (e.g., Miller, 2010; Seixas, 2000; VanSledright,

2008). Should history be used to foster a specific sense of identity? Should it be used to foster social justice? Although supporters of these two approaches tend to sympathize with different sides of the political spectrum, the views of history implied by these purposes may be more similar than it appears. Deeply engrained in American public education, the echo of this conceptualization of history often surfaced in this study participants' responses. Dewey (1916, p. 210) epitomized it in *Democracy and Education*:

[H]istory as a formulated study is but the body of known facts about the activities and sufferings of the social groups with which our own lives are continuous, and through reference to which our own customs and institutions are illuminated.

Few would dispute that developing students' identity and fostering social justice are worthy educational goals. However, translating these goals into practice turns out to be very problematic. For example, in an increasingly multicultural society, the groups with which students' lives are continuous may be widely different. Should curricula try to "cover" them all, while keeping an eye on the traditional narrative, which may illuminate *our* own customs and institutions? Unfortunately, this seems the road that school-systems often choose to take, although the percentage of students who reach a proficient "understanding of the development of America's democratic institutions and ideals" (as measured by the National Assessment of Educational Progress U.S. history assessment) continues to remain very low, reaching its minimum in 12th grade (Lee & Weiss, 2007).

Moreover, and in my view more importantly, should students be cajoled into believing that history is “the body of known facts” that someone has selected, albeit in the pursuit of laudable goals, as worthy of their learning? Is the epistemic inconsistency that often ensues less detrimental for a democratic citizenry than the lack of familiarity with often abstract notions of democratic institutions and ideals? This study illustrated how this pedagogical and epistemic choice implies heavy cognitive costs. In particular, it fosters ideas and habits of mind that actively hinder students’ capacity to think historically, impedes historical understanding, and hampers the development of epistemic beliefs that correlate to important components of critical thinking. In summary, it seems to me that students do not adequately learn what the educational system envisions as the “right facts” while, at the same time, they fail to develop those cognitive tools and criteria that might enable them to participate in the historical discourse as actors and critical readers.

Similar to students, teachers also pay the cost of not being educated in this kind of thinking while experiencing the frustration of juggling the demands of coverage of increasingly long curricula, of bearing the lack of interest and understanding that often characterize the climate of their classrooms, and of witnessing the failure of several of their students. The fact that these are the outcomes of a system financed with public money makes taxpayers also bear the cost of such failure since society, as long as it defines itself as a free, democratic society, is not served well by a school system unable to educate a critical citizenry.

Analyses of the reasons that allow this “lose/lose” situation to perpetuate are beyond the scope of this study since they would probably require the investigation of

whom this state of affairs benefits, an investigation that is not possible with the data currently collected. However, I do believe that the evidence gathered here provides educators with several reasons for concern and a few reasons for hope. Several reasons for concern have been detailed in the prior chapters. Here, I focus on the level of influence that the school context and the culture at large (symbolized by the darker background of Figure 6) may play on students' epistemic development and on their capacity to think historically.

In terms of historical thinking, school seems to play a determinant role, because students were so similar, in this respect. Hence, it is unlikely that students develop the capacity to think historically without a sustained commitment on the part of the school system that encourages teachers to focus on this goal (Bain 2000, 2005; Husbands, et al., 2003; VanSledright, 2002). This might be bad news, indeed, since the students of today are likely to be tomorrow's teachers and administrators. At what point should we expect change to take place? The later we move the target (e.g., college education programs or teacher professional development programs) the tougher it may be to challenge ideas and cognitive habits reinforced during a life-long academic career. On the other hand, how can someone teach historical thinking without having, in turn, being taught to do so?

In contrast, the larger difference across students I found in terms of epistemic beliefs may suggest that the culture at large and the specific culture in which each student lives play an important role in epistemic development. Mark was a very telling example in this respect, articulating beliefs that suggested a level of competence much greater than his peers. Yet, contemporary culture may not foster

epistemic consistency if, as some philosophers claim, multiculturalism is characterized by two apparently alternative, but in reality intertwined undercurrents that shape the religious, social, philosophical, and cultural horizon. On one hand, fundamentalism affirms a truth independent from a knower and, on the other hand, relativism affirms a knower unable to attain any truth (Esposito, 2008).

I found an echo of these positions in the participants' desire to access the past "as it really was." Historiographers are familiar with this attempt and some may interpret it as the mark of the positivist school and perhaps dismiss it as epistemic naïveté. Yet, as psychologists, we cannot avoid acknowledging that the desire for truth played an important role in these participants' conceptions of knowledge. At the same time, in so doing, participants seemed to consider the knower as the weakest link, at best, or as an unyielding enemy, at worst, in respect to pursuing this goal. In fact, when voicing ideas typical of the copier stance, participants seemed to wish for a direct, unmediated access to the past. They seemed to hope to discover a repository of historical knowledge undefiled by biases and by the inevitable perspective and inaccuracies that come with human intervention. On the other hand, when participants acknowledged the inevitability of the human role in the generation of knowledge, they were quick in concluding that the knower can never reach a reliable knowledge about the past, thus casting the object of historical knowledge in an unreachable distance. Hence, the alternative typical of many utterances I classified as *Transitional* was between an absent knower and an unknowable object.

It is precisely in this respect that I believe that, for its very nature, history, as it is defined and practiced within the disciplinary community, may offer a distinct

contribution to overcome the cognitive impasses suggested in this study. In this respect, the desire for truth voiced by participants and especially their willingness to discuss epistemic issues are, in my view, good news for history educators, because they suggest that what history education has to offer addresses a fundamental human need. First, history can clearly (and perhaps even proudly) exemplify the key role that human reason is called to play in the generation of knowledge, thus proposing a way around both fundamentalism and relativism. Second, it can show that reason's proper field of application extends well beyond the realm of the so called "exact sciences," as long as it doesn't self-constrain within the boundaries of mathematical logic. For this reason, and not for the purpose of training mini-historians, I believe that much can be gained by looking at the criteria that historians seem to follow in generating historical knowledge, beyond their disagreements about the nature and sometimes even the possibility of history.

As a case in point, let's consider how historians face one of the impasses that most often emerged from this study's participants. In reacting to the BHQ's statements, participants were prompted to reflect on the problem of building reliable knowledge about the past while having to rely on fallible human witnesses. When the problem was cast as a pursuit of an unattainable "objectivity," they often concluded that history is an impossible enterprise. Yet, the consideration that knowledge of the past is built upon an act of faith in the trustworthiness of the witness (usually mediated by a document) does not prevent historical inquiry if, as Marrou (1954/1988) argues, such faith is based upon a rational effort. Far from being an arbitrary or irrational act, this effort entails the critical analysis of the documents,

illuminated by knowledge of the specific historical context in which they originated and of the human being and human life, in general (Marrou, 1954/1988, pp. 119-120).

Marrou's rational effort bears the marks of historical thinking, which so often emerged in studies of history experts, but was seldom present in their less competent counterparts (Wineburg, 2001a). These attitudes also presuppose a set of beliefs compatible with what we have named criterialist stance (Maggioni et al., 2004), to highlight the central role that domain-specific criteria play in the epistemic definition of historical knowledge.

Marrou's reference to "an act of faith" may sound unpalatable or irrational to modern tastes. Yet, daily life is replete of situations in which this method serves us well. When the traffic light turns green, we cross the road, trusting that traffic in the opposite direction will not attempt to do the same. Granted, accidents happen because drivers occasionally do cross the road on a red light and, under certain conditions, we would do well to be cautious in crossing even on a green light. Yet, should we decide that it is impossible to trust anyone and anything, including our own judgment, immobility and paralysis would be the consequence. Analogously, we may decide that human witnesses are all too unreliable and human reason too weak to understand anything about the human experience of those that came before us. Regrettably, the consequence would be cognitive impasse. How to decide the best course of action or what to believe under conditions of uncertainty is certainly a familiar problem in human history and in daily life. Yet, as Simmias suggested in his dialogue with Socrates in Plato's *Phaedo*, "the best and most irrefragable of human theories" may serve as "the raft" to sustain the quest for knowledge, albeit "not

without risk” (trans. 1953, 85). I believe that the greatness of an educator consists in accepting the risk to entrust this raft to her students’ reason and freedom.

APPENDIX A
Teacher Questionnaire

TEACHER QUESTIONNAIRE

Please provide the following information.

Educational experience:

- Undergraduate degree

Institution _____

Graduation date: _____

Major _____

Minor _____

History classes taken (briefly describe each) _____

- Graduate degree

Institution _____

Graduation date _____

History classes taken (briefly describe each) _____

- Professional development programs attended while in service (briefly describe duration and main goal)

Professional experience:

- Number of years _____
- Classes taught (courses; level, e.g., honor, AP)

History Teaching Goals:

Please rank in order of importance and briefly describe your major goals in teaching history.

Other Goals:

Please list any other major educational goals you pursue in your teaching.

How confident are you about reaching your goals with this particular class? Why?

Thank you!

APPENDIX B
Evaluation of Students' Essays

EVALUATION OF STUDENT ESSAY

Please take some time to review these papers written by high school students in response to the following prompt:

How and why did technological developments play an important part in twentieth century wars?

As you read through these papers, please grade each essay, and include comments that may be useful to the student.

Once you have finished, I will ask you to share your thoughts on the following issues.

- a. What criteria did you use to grade these papers?
- b. What is the apparent level of knowledge of this group of students?
- c. What potential misconceptions and limitations remain in their understandings?
- d. If these were your students, what would your next instructional steps be?

Thank you!

STUDENT PAPER # 1

Technological developments were an important part in the twentieth century wars, especially in WWII. In WWII, technological developments enabled better war weapons and equipment for effective fighting. The British and the U.S. victories and experiences with the new technological developments explain to us their effectiveness and significance in war. The two major areas of technology that has drastically developed in WWII are the weapons: aircraft, bombs, and naval vehicles; and intelligence devices: radar, and decoding of secret messages. Thus, the technological developments played an important role in WWII by creating quicker and efficient methods to disable enemies and because they helped in ending the war.

The most important area of technology is the weaponry. The new weapons that were created during WWII changed the face of the earth. The most impacting development was the new air warfare that began in WWII with new aircraft, jets, and bombs dropped from the aircraft. WWII began with cavalry, trenches, and old age battleships but in about six years, missiles and dangerous aircraft were created. Through the development of deadly atomic and biochemical weapons, the U.S. created one powerful atomic bomb that would be used to effectively put an end to war. When U.S. bombed Hiroshima in Japan, it led to thousands of civilians' deaths as well as the complete surrender of Japan. These deadly aerial bombings were an effective way of getting the country's attention, because so much and so many were destroyed. Every country would create better, lighter, more efficient aircraft to fight in the air and to effectively target their bombs to the desired regions. This development of the atomic bomb which was effectively used on Hiroshima and

Nagasaki was called the Manhattan Project. These nuclear weapons and the development of new aircraft created a new kind of warfare: air warfare.

In addition to these developments, land vehicles were created to be faster, and lighter. For example, between the battle of France and Germany, France had cruiser tanks and Germany had light tanks thus enabling Germany to win in “mechanized battles”. In addition, Germany’s new Panther tanks helped them in the Battle of Kursk. Compared to WWI, there was now better tanks and better organization during the war. In addition to air warfare, naval warfare had many new technological developments also such as new aircraft carriers, that were used in the Battle of the Coral Sea and submarines that were all used effectively when Germany used submarines to stop U.S. and Canada’s resources from getting to the Allies. During these major weapon developments, there were also many electronic devices that were created.

Another major technological development would be the intelligence and its electronics. Prior to the war, electronic devices were not seen as essential, but in WWII, they were significant. For example, the air assault on Britain in 1940 by Germany, the Germans were unable to get control over the air in the battle, because the British Royal Air Force was able to fight off the bombers with the help of new radar devices that helped them detect the approaching enemy planes. In addition, the British intelligence operation, Ultra, was able to break the code of German communications device called the enigma which was used for high government military officials. Similarly to Britain’s interception, U.S. was able to prevent the invasion of Midway Island because they were able to decode secret Japanese

messages that stated their desired target was Midway, thus the U.S. naval leaders were alerted before the Japanese even got there, therefore, making the battle faster and easier to deal with. The increase in electronics and increase in computer technology all were helpful in many ways to inform countries of the enemies' whereabouts and plans of invasion.

Thus, all of these technological developments were useful in helping the countries have effective equipment to fight against their enemies. The technological advancements of weapons such as tanks, submarines, and atomic bombs, including new radar devices and better electronics to detect enemy ships and troops enabled the enemies to have a powerful impact during battles as well as quickly bringing an end to the war. All of these developments no matter which country, helped every country, and newer and enhanced technological weaponry and intelligence enabled the Allied powers to win after all.

STUDENT PAPER #2

Up to and during the Second World War there were a great many technological developments. The advent of these new technologies allowed both for the creation of newer, more devastating tactics and practices, increasing the number of deaths on a scale never before seen, and new healing capabilities that cured numerous otherwise fatal wounds. Tactics that developed out of new technology included Blitzkrieg, fighting for the control of airspace, and the bombing of cities.

From the start of the war, the Germans utilized Blitzkrieg. New or improved technologies such as Panzer tanks, motor vehicles, and fighter planes allowed the Germans engage in this rapid warfare tactic. Concentrated armor divisions would break through enemy lines. They would be followed by mobile troops who penetrated enemy territory as far in as possible. All through this thrust, the land units would be supported by Dive Bombers. Tom Wintringham in his book The New Ways of War(1940) describes the armored and mobile divisions as the “finger-nails” where “each separate claw seeks a weak spot” in the enemies lines. Other nations such as France and Poland anticipated World War I style trench warfare where it had been nearly impossible and very costly to break through an enemy’s lines. They were totally unprepared. It’s no wonder that Poland was overrun in a month, and France surrendered 43 days after the invasion began. Blitzkrieg allowed the Germans to overrun large expanses of land in a relatively short span of time.

The developments in airplane technology had a lot of implications for the war. Airspace, like land and water, became strategic to control. Airplanes could be used to support advancing troops, sink transports, or drop off troops behind enemy lines.

Thus when the Germans had subdued most of Europe and looked to Great Britain, the strategic value of planes made it impossible for them to launch an invasion with control of the airspace over Britain first. Thus ensued the Battle of Britain, in which the British were able to maintain control of the airspace and thus prevent a future invasion.

Airplanes also allowed for the bombing of enemy targets. This had huge implications. When attempting to do maximum damage to an enemy both sides found it more efficient to bomb the area of a city at night rather than precision bomb during the day. This meant that civilians would be targeted on a scale never before seen. In London 20,000 citizens died in bombings. The city of Coventry was mostly destroyed by German bombing just as Dresden was devastated after the fire bombings by the Allies. The Japanese used planes as bombs and attempted to fly into U.S. ship in a tactic known as Kamikaze. The most advanced and devastating technology was a bomb, the atomic bomb. The United States dropped it on Hiroshima killing 78,000 in the blast. Another was dropped on Nagasaki.

Also there were new and improved weapons. The Germans drove in Panzer tanks while the Americans had Sherman tanks. All could unleash carnage like nothing before. Infantry arms like the MP40 or M1 Garand were more precise or rapid than arms used in previous wars

All this new technology lead to greater killing. However, there were also technologies used to save lives. The widespread use of Penicillin and plasma transfusion saved many. Historian R. R. Palmer states that “one of every two of those wounded was saved” by the new medical technology.

In conclusion, each side used technology as a means to gain an edge, whether it meant killing more of the enemy or saving more of their own. Mostly however, technology led to death on a larger scale and made World War II the most bloody conflict in history.

STUDENT PAPER #3

Twentieth century warfare saw for the first time the massive destruction made possible with tanks, airplanes, submarines, and nuclear weapons. Although tactics were always the deciding factor, a battle was seriously tilted towards the more mobile and advanced army. Technology turned World War II into a contest, over which side could develop better arms, and put enormous killing power into the hands of ruthless and desperate leaders, leading to more barbarism than progress.

The battles of World War II were decided most prevalently by the technology of the opposing armies. The Germans were so feared at the start of the war because they had the most prepared military at the time. The Blitzkrieg, lightning fast potent attacks at specific points, was a military tactic that originated in World War I's Schlieffen Plan but made possible by the development of the more mobile German Panzer tanks and the air force as a supporting and disorienting unit. The Maginot line may have been made up of the sophisticated defenses from the latest developments, but the technology was immobile and therefore ineffective when the Germans just skirted around the fortifications. The French were ordered to expand their defenses, only to find that the German Panzers had already passed the places they were supposed to fortify. The Germans, however, were foiled at times like in the Battle of Britain and in Russia in which the Allied forces had better technology. The German goal in the battle was to destroy the Royal Air Force and the industry behind it, but the German's main fighters (the Me-109 and the Me-110) were operating from far-away bases and lacked the range to effectively support the bombers against a well-equipped air force such as Great Britain's. The Royal Air Force's Supermarine

Spitfire could easily shoot down the German bombers, and the Germans had not yet developed a heavy bomber to match those of the Allies. The British has also developed a radar system to detect enemy aircraft and therefore could locate the German craft as they flew over Britain. Thus the Germans could not dominate over the RAF or properly disrupt the aircraft industry. Throughout the Russian campaign, the German equipment was not properly prepared for the harsh Russian weather conditions, for German overconfidence believed the invasion would be successfully completed before the winter set in. The Germans had to waste fuel leaving their tanks on for twenty four hours a day so that the engines would not be damaged by the cold weather. Their vehicles had wheels as opposed to tracked bottoms and got stuck in the mud. In the battle of Stalingrad, the Russians had the superior tanks, with better mobility and firing power, which gave them the advantage in surrounding the German Sixth Army. In fact as the war with Russia progressed, the Russian military improved and gained more as Stalin mobilized the economy toward war production in order to develop new technologies, such as the Russian tank.

Aerial bombing and other technologies made enormous death counts frighteningly easy to achieve. Aerial warfare was fairly new in World War II, but the Germans did not waste time in dropping bombs over Allied arms factories and civilian populations. The British and the US also fought a psychological war with their aircrafts, destroying cities such as Berlin to destroy the morale of the people. In Dresden, the city was obliterated and hundreds of thousands were killed by aerial bombs. Japan used its greatly superior technology to overrun China and brutally conquer its people, in the Rape of Nanking where helpless woman were raped and civilians cut down.

Germany used the mobility given by railroads and developed the science of killing and working the body to death to build highly efficient concentration camps, in which they could wage a cultural war, utilizing their enemies and conquered peoples to work the labor jobs needed during war. The height of technology in World War II was the deadliest: the atomic bomb. The US had developed five nuclear warheads in the Manhattan Project and dropped the first on Hiroshima, Japan. The US claims to have done this because the Japanese refused to surrender, and although this is not clear, the US achieved their goal in quickly ending the Pacific war with the second bomb over Nagasaki. Hundreds of thousands of ordinary civilians were killed with the drop of two bombs, and more would feel the effects for years after.

Thus, while technology meant a huge advantage in battle, in World War II it also created more effective killing, in which each side competed against the other and the innocent civilians lost the most. World War II tallied the highest death toll of any war ever fought and is the only war in known history in which more civilians died than soldiers.

STUDENT PAPER #4

The technologies developed during World War II increased the war's casualties, prolonged the war, and also laid the foundation for long-term strife between nations. Two major technologies that had this effect are submarines and atomic bombs.

During World War II Germany had the largest fleet of submarines. This is mostly due to the limitation of the Treaty of Versailles on the size of Germany's surface navy. They were permitted to have a very small surface navy, and had subsequently built up a large fleet of submarines. Also, submarines took a relatively short time to be built. When war finally broke out, Germany realized that their surface navy would never be able to defeat the Royal Navy in a battle. This drove Hitler to switch all of Germany's shipbuilding completely to the construction of submarines. By the end of World War II, Germany's submarine fleet was almost one thousand strong. Use of submarines prolonged the war. During World War II, the way submarines communicated became much more effective with the help of Enigma, the German encoder. The use of Enigma allowed detailed attack plans to be sent between submarines, making "wolf-pack" attacks on Allied convoys easier. Germany used submarines mainly to attack ships supplying Great Britain with food for their population and raw materials for their industry. This was effective because Great Britain is an island. The use of submarines also prolonged the war in that it allowed German dominance of the Atlantic Ocean. This made large Allied shipments of troops and supplies almost impossible, so the Allies could not execute major land offensives until after 1943, when they had started to retake the Atlantic with the help

of radar to locate German submarines. The use of submarines also helped lay the foundation for long-term strife between nations. The delay in Allied assistance to Russia caused Russia to once again feel isolated by them, which was a factor in the Cold War.

World War II was also the first war in which nuclear weapons, namely atomic bombs, were used. The use of the atomic bombs led to increased casualties and the laying of the foundation for long-term bitterness between nations. The atomic bomb was created in America by Allied scientists under the name of “Manhattan Project.” The atomic bombs were dropped on Hiroshima and Nagasaki, where they devastated the entire cities, reducing them to nothingness. Over 120,000 casualties resulted from these two bombs alone, 95% of which were civilian casualties. The main purpose behind the use of the atomic bombs was forcing the unconditional surrender of Japan. Some historians say that the use of the atomic bombs is what forced the Japanese to surrender less than a week after the bombings, but other historians, namely Japanese historians, claim that the atomic bombs were unnecessary since Japan was supposedly planning to surrender anyway. Either way, the use of the atomic bombs in Japan contributed to the laying of the foundation of international strife in that many countries considered the United States’ decision unethical and unnecessary. Also, the long-term effects of the radiation that resulted from the atomic bombs killed almost as many as the initial explosion. Never before had such brute force been used in a war. In the years after World War II, the development of nuclear weapons continued and the United States and Russia became involved in somewhat of a nuclear arms race. Further development of rocket propulsion as a method of delivery for nuclear

weapons allowed nuclear warfare to be used anywhere in the world from anywhere in the world, which instilled mutual fear in the United States and Russia, which was part of the lead up to the Cold War. This is another way that the use of atomic bombs led to long-term conflict between nations.

In conclusion, the technologies developed during World War II increased the war's casualties, prolonged the war, and also laid the foundation for long-term strife between nations. Two major technologies that had this effect are submarines and atomic bombs. Submarine use prolonged the war in that it gave Germany time to establish their dominance over the European continent. Submarine use helped lay the foundation for long-term strife between countries in that it prevented the Allies from sending aid to Russia, which made them feel isolated. The use of the atomic bomb caused unprecedented casualties in Japan from its instant explosion and long-term radiation effects. The use of the atomic bomb also helped lay the foundation for long-term strife between countries in that it started the arms race between Russia and the United States, and because it was considered by many to be an unethical decision.

APPENDIX C

Beliefs about History Questionnaire (BHQ)

Directions: For the items below, please CIRCLE the number that best reflects your level of disagreement/ agreement with the given statement.	Stron- gly Dis- agree	Dis- agree	Some - what Dis- agree	Some - what Agree	Agree	Stron- gly Agree
1. It is fundamental that students are taught to support their reasoning with evidence.	1	2	3	4	5	6
2. History is simply a matter of interpretation.	1	2	3	4	5	6
3. A historical account is the product of a disciplined method of inquiry.	1	2	3	4	5	6
4. Students who read many history books learn that the past is what the historian makes it to be.	1	2	3	4	5	6
5. Disagreement about the same event in the past is always due to lack of evidence.	1	2	3	4	5	6
6. Good students know that history is basically a matter of opinion.	1	2	3	4	5	6
7. Students need to be taught to deal with conflicting evidence.	1	2	3	4	5	6
8. Historical claims cannot be justified, since they are simply a matter of interpretation.	1	2	3	4	5	6
9. Good general reading and comprehension skills are enough to learn history well.	1	2	3	4	5	6
10. Since there is no way to know what really happened in the past, students can believe whatever story they choose.	1	2	3	4	5	6
11. History is a critical inquiry about the past.	1	2	3	4	5	6
12. The past is what the historian makes it to be.	1	2	3	4	5	6
13. Comparing sources and understanding author perspective are essential components of the process of learning history.	1	2	3	4	5	6
14. It is impossible to know anything for sure about the past, since no one of us was there.	1	2	3	4	5	6
15. Knowledge of the historical method is fundamental for historians and students alike.	1	2	3	4	5	6
16. The facts speak for themselves.	1	2	3	4	5	6
17. Students need to be aware that history is essentially a matter of interpretation.	1	2	3	4	5	6
18. Reasonable accounts can be constructed even in the presence of conflicting evidence.	1	2	3	4	5	6
19. Even eyewitnesses do not always agree with each other, so there is no way to know what happened.	1	2	3	4	5	6
20. Teachers should not question students' historical opinions, only check that they know the facts.	1	2	3	4	5	6
21. History is the reasonable reconstruction of past occurrences based on the available evidence.	1	2	3	4	5	6
22. There is no evidence in history.	1	2	3	4	5	6

APPENDIX D

Constructed Response Task (Columbus)

Document 1

Columbus Before the Council at Salamanca

Columbus appeared in a most unfavorable light before a scholastic body: an obscure navigator, a member of no learned institution, destitute of all the trappings and circumstances which sometimes give oracular authority to dullness, and depending upon the mere force of natural genius.

Bewildered in a maze of religious controversy, mankind had retraced their steps, and receded from the boundary of ancient knowledge..... To his simplest proposition, the spherical form of the earth, were opposed figurative texts of Scripture.....

Objections of a graver nature were advanced on the authority of St. Augustine. He pronounces the doctrine of Antipodes to be incompatible with the historical foundations of our faith; since, to assert that there were inhabited lands on the opposite side of the globe would be to maintain that there were nations not descended from Adam.....

Others more versed in science admitted the globular form of the earth; but.....they observed that the circumference of the earth must be so great as to require at least three years to the voyage, and those who should undertake it must perish of hunger and thirst.

Irving W. (1890). *The Life and Voyages of Christopher Columbus*. New York: Merrill & Baker.

Document 2

But as to the fable that there are Antipodes, that is to say, men on the opposite side of the earth, where the sun rises when it sets to us, men who walk with their feet opposite ours, that is on no ground credible. And, indeed, it is not affirmed that this has been learned by historical knowledge, but by scientific conjecture, on the ground that the earth is suspended within the concavity of the sky, and that it has as much room on the one side of it as on the other: hence they say that the part which is beneath must also be inhabited. But they do not remark that, although it be supposed or scientifically demonstrated that the world is of a round and spherical form, yet it does not follow that the other side of the earth is bare of water; nor even, though it be bare, does it immediately follow that it is peopled. ...And it is too absurd to say, that some men might have taken ship and traversed the whole wide ocean, and crossed from this side of the world to the other, and that thus even the inhabitants of that distant region are descended from that one first man.

St. Augustine of Hippo (Bishop and Doctor of the Church - 354-430 A.D.)

Document 3

In the sixth century, this development culminated in what was nothing less than a complete and detailed system of the universe, claiming to be based upon Scripture, its author being the Egyptian monk Cosmas Indicopleustes.....Nothing can be more touching in its simplicity than Cosmas's summing up of his great argument. He declares, "We say therefore with Isaiah that the heaven embracing the universe is a vault, with Job that it is joined to the earth, and with Moses that the length of the earth is greater than its breadth."

White, A.D. (1955). *A History of the Warfare of Science with Theology in Christendom*. New York: George Braziller.

Document 4

The maps of Ptolemy.....were forgotten in the West for a thousand years, and replaced by imaginary constructions based on the supposed teaching of Holy Writ [the Bible]. The sphericity of the earth was, in fact, formally denied by the Church, and the mind of Western man, so far as it moved in this matter at all, moved back to the old confused notion of a modulated “flatland,” with the kingdoms of the world surrounding Jerusalem, the divinely chosen center of the terrestrial disk.

Marvin, F.S. (1921). *Science and the Unity of Mankind*. In Singer, C. (Ed). *Studies in the History and Method of Science*. Oxford: Clarendon Press

Document 5

It is now clear that nearly all medieval scholars conceived of the earth as a globe. Its size was estimated according to one of two measurements of its circumference inherited from the Greeks, either 180,000 stades according to Posidonius and Ptolemy, or 252,000 stades according to Eratosthenes. A stade, six hundred Greek feet, is variously estimated to be equivalent to 517 to 607 feet by modern authors. If the former, Eratosthenes’ figure for the earth’s circumference is only 50 miles off from the modern one. These two numbers survived side by side throughout the Middle Ages and were still coexistent in Columbus’s day. The smaller figure drastically overestimated the size of the inhabited known world, or *ecumene*, in relation to the whole, and was greatly preferred by Columbus, who set out to cross a correspondingly smaller ocean.

Edson, E. (1997). *Mapping Time and Space: How Medieval Mapmakers Viewed Their World*. London: The British Library.

Document 6

The untruth of the Flat Error lies in its incoherence as well as in its violation of facts. First there is the flat-out Flat Error that *never* before Columbus did anyone know that the world was round. This dismisses the careful calculations of the Greek geographers along with their medieval successors. [...]

Another version of the Error is that the ancient Greeks may have known that the world was round, but the knowledge was lost (or suppressed) in medieval darkness.

[...] Nineteenth- and twentieth-century writers flattened the medieval globe. [...]

Throughout the nineteenth century, middle-class liberal progressives projected their own ideals upon heroes of the past, among them Columbus. This Columbus existed only in the minds of amiable progressives whose disdain for the Catholic Revival and the Romantics of the early nineteenth century colored the way they viewed the Middle Ages.

Russell, J.B. (1991). *Inventing the Flat Earth: Columbus and Modern Historians*. New York: Praeger

APPENDIX E

Interest Questionnaire (Teachers)

Directions: Please indicate how often you participate in each of the described activities by CIRCLING the number that best reflects your participation.	Very rarely											Very often	
	0	1	2	3	4	5	6	7	8	9			
1. Read a scholarly history book.	0	1	2	3	4	5	6	7	8	9			
2. Visit a museum and/or travel to historical sites.	0	1	2	3	4	5	6	7	8	9			
3. Search for primary source material.	0	1	2	3	4	5	6	7	8	9			
4. Read a historical novel.	0	1	2	3	4	5	6	7	8	9			
5. Engage in historical inquiry.	0	1	2	3	4	5	6	7	8	9			
6. Watch a historical documentary.	0	1	2	3	4	5	6	7	8	9			
7. Write a history-related paper.	0	1	2	3	4	5	6	7	8	9			
8. Collect historical memorabilia.	0	1	2	3	4	5	6	7	8	9			
9. Construct a history curriculum.	0	1	2	3	4	5	6	7	8	9			
10. Participate in activities/events dealing with historical issues.	0	1	2	3	4	5	6	7	8	9			
11. Serve as a historical authority or resource.	0	1	2	3	4	5	6	7	8	9			
12. Give a talk about a history topic at a public meeting.	0	1	2	3	4	5	6	7	8	9			
13. Watch a popular movie on a historical topic.	0	1	2	3	4	5	6	7	8	9			

APPENDIX F

Student Questionnaire

STUDENT QUESTIONNAIRE

Please, let me know a bit about you.

- Name _____
- Grade: 9th [] 10th [] 11th [] 12th []
- Age: _____
- Gender: Male [] Female []
- Please list the history classes you have taken in high school. Please indicate if the course was honor (H) or was Advanced Placement (AP):

- Last year's GPA (approximate as best as you can)

- Last year's final grade in English

- Last year's reading score on the MSA test (approximate)

On a scale from 0 to 10, how confident are you about learning history this semester?
Why?

Thank you for your time!

APPENDIX G

Constructed Response Task (Captain Cook)

Document 1

When he [Captain Cook] landed at Kealakekua Bay, a multitude of natives, variously estimated at from ten to fifteen thousand, flocked about him and conducted him to the principal temple with more than royal honors—with honors suited to their chiefest god, for such they took him to be. They called him Lono—a deity who had resided at that place in a former age, but who had gone away and had ever since been anxiously expected back by the people.

When Cook approached the awe-stricken people, they prostrated themselves and hid their faces. His coming was announced in a loud voice by heralds...Arrived at the temple, he was taken into the most sacred part and placed before the principal idol...Ten men, bearing a large hog and bundles of red cloth, then entered the temple and prostrated themselves before him. The cloth was taken from them by the priest, who encircled Cook with its numerous folds, and afterward offered the hog to him in sacrifice...He was anointed by the high priest—that is to say, his arms, hands, and face, were slimed over with the chewed meat of a cocoa-nut; as the last most delicate attention, he was fed with swine-meat which had been masticated for him by a filthy old man.

These distinguished civilities were never offered by the islanders to mere human beings.

Cook

was mistaken for their absent god; he accepted the situation and helped the natives to deceive themselves.

Twain, M. (1938). *Letters from the Sandwic Islands*. California: Stanford University Press.

Document 2

The next morning, the strange object lay outside Ka‘ahe at Waimea. Those who saw it understood that it was a ship they were looking at, with tall masts and sails shaped like a giant manta ray. Some spectators were terrified. Their first thought was that the god Lono, as he had promised, was returning on a floating island. Every one was excited, and Waimea echoed with their shouts and exclamations.

The high priest, Kū-‘ohu, declared, “That can be nothing else than the *heiau* [temple] of the god Lono. In the center is the tower of the demigod Ke-o-lewa, and there in the back is the place of sacrifice at the altar.” Coming from such a reliable source as the chief priest, the rumor grew that the leader of this ship was indeed the god Lono.

Kū-‘ohu, however, after several days of close observation, had doubts that this was Lono. He consulted the sacred cup and concluded that these were not gods but men. But, until they were

absolutely sure, it was safer to be prudent.

Wichman, F. (2003). *Nā pua ali‘i o kaula‘i: Ruling chiefs of kaula‘i*. Honolulu: University of Hawai‘i Press.

Document 3

At the time Lono [Cook] arrived the people could not go out to sea in their canoes because it was the time for the annual gift giving ceremonies called the Makahiki. But because Lono had arrived by sea the people assumed it was perfectly proper for them to go out to sea in their canoes. The people were convinced Lono was really a god and his vessel was a temple.

Kahananui, D. (1984). *Ka Mooolelo Hawaii*. [Translation from the oral histories collected by the students of the Lahainaluna mission high-school in 1838] Honolulu: University of Hawaii.

Document 4

At every level of the social order [in Hawai'i], there is a potential interchange of being between humanity and divinity...The greater akua [gods] are realized in chiefs, priests, prophets, and specific ritual figures...[It] is just the opposite of Western distinctions of God, man, and nature, each occupying a separate kingdom of being. Empirically, then, never the three shall meet, or at least not until the last judgment; whereas, for Hawaiians, the appearance of Lonomakua (the god Lono) at the Makahiki [religious festival celebrating the Hawaiian New Year] of 1778-79 could be substantiated by perceptual evidence...

Hawaiians were not the only Polynesian people to interpret the advent of Captain Cook or other early Europeans as a spiritual visitation. The phenomenon is still less unusual if one considers other Pacific island peoples, notably New Guineans, of whom the like is well documented due to the recency in some areas of "first contact."

Sahlins, M. (1995). *How "Natives" think about Captain Cook, for example*. Chicago: The University of Chicago.

Document 5

As he [Cook] approached the southeastern coast of Kauai he beheld a party of native fishermen, and, holding out some brass medals on bits of string, with some pieces of iron, he was gratified to see that they understood the art of barter. They at once came off in boats, bringing fish, coconuts and bananas, which they proceed to exchange for iron. Iron, he learned, both then and later, was most precious in the native eyes, on account of its usefulness for tools and weapons.

Gowen, H. (1919). *The Napoleon of the Pacific: Kamehameha the Great*. New York: Fleming H. Revell Company.

Document 6

When the great navigator and "discoverer" of Polynesia James Cook landed on the shores of Hawai'i on Sunday, 17 January 1779, during the festival of Makahiki [religious festival celebrating the New Hawaiian Year], he was greeted as the returning god Lono. I question this "fact," which I show was created in the European imagination of the eighteenth century and after....To put it bluntly, I doubt that the natives created their European god; the Europeans created him for them. This "European god" is a myth of conquest, imperialism, and civilization. (82)

Obeyesekere, G. (1992). *The Apotheosis of Captain Cook*. New Jersey: Princeton University Press.

APPENDIX H

Rubric for the Analysis of the Constructed Response Tasks and of the Structured
Interviews

CODE	CODE	DESCRIPTION	EXAMPLE
EB	EBCO	<p>Evidence is seen as detached from argument. In other words, there is no overall awareness of the role of the knower.</p> <p>Two main components were identified: a) H=P: History and the past are used as synonyms. What is available from the past (remnants of the past) becomes history and history is only that (historian is not present). b) NoHist: The historian is a chronicler or a serendipitous finder who does not select nor interpret sources. Evidence is found ready made. At best, the historian discriminates between what is true and what is false.</p>	<p>[T]here shouldn't be some method of inquiry for history it should just be what it is and method could skew the result.</p> <p>[History] is not what he makes it to be, it's what history makes it to be.</p> <p>[H]istorians are just humans, they do not make history, other people make it, he can just go and tell you how it goes.</p> <p>I disagree with that [There is no evidence in history], because we have documents, and buildings, and monuments and stuff about the past.</p>
	TR1	<p>Ideally, history should coincide with the past. However, since we cannot know all of it, whenever the evidence is debatable or simply cannot be found, it remains a matter of opinions (historian as "wanna be" or "should be" chronicler).</p> <p>Another manifestation is the dichotomy facts vs. opinion. Facts are objective, while opinions cannot be challenged.</p>	<p>[T]hey [the historians] are not sure, so they interpret what they think happened long time ago.</p> <p>[I]f you learn about early 19 hundreds, no one is around, no one is really around anymore, that was there, so what all you really have to base it on is what historians say it was, like books that were written then, but they may still be fabricated on it, so I guess, it might not all be true if you are going to read a bunch of books about it, I think all you have depends on what historians say was going on.</p> <p>Opinions are just their opinions you can't really change them, yeah, they need to check their facts on it.</p> <p>I kind of agree in history with that [Historical claims cannot be justified, since they are simply a matter of interpretation]. No, they can be justified, like the documents are real.</p>

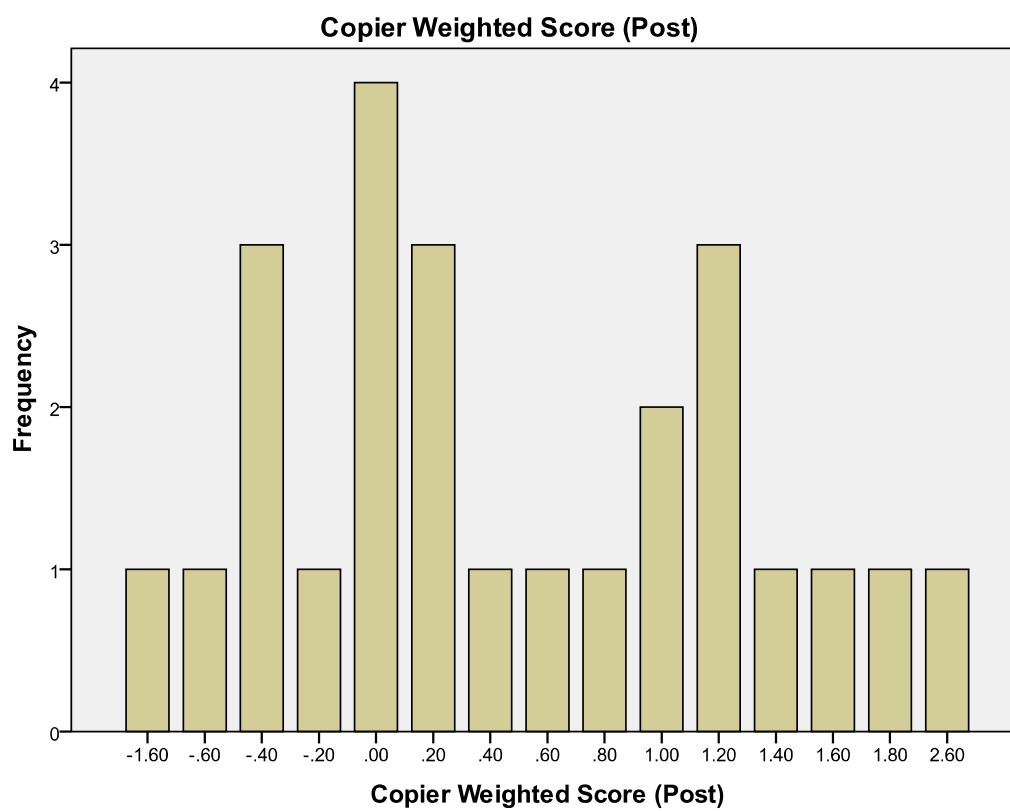
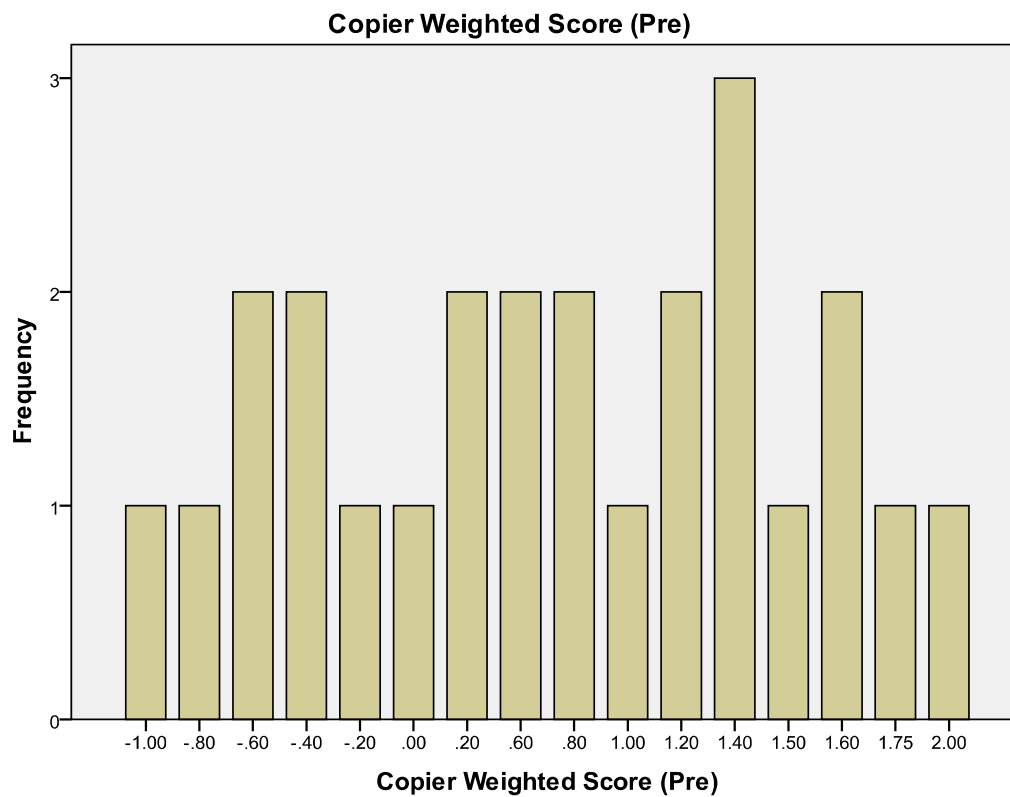
	EBSUB	<p>Clear predominance of the subject; history is unjustified and biased.</p> <p>Focus is mainly on the knower.</p> <p>History depends on one's opinions that color how one judges it and how one selects it (like in facts vs. opinions; political opinions).</p> <p>Historian is seen as unbound opinionist; there is no evidence or it does not really matter.</p>	<p>[H]istory is basically what you make of it depending on what you have got to know, what your background is, like democratic, republican, because history, especially like that, people see it differently depending on whether you are republican or democratic.</p> <p>It is [History is simply a matter of interpretation], like to different, like, historians about everything it is interpretation because they recognize different opinions about things and different artifacts about everything</p>
	TR2	<p>History is the interpretive work of the historian based on evidence; the existence of a method is acknowledged, but there is no clarity about how it may look like.</p> <p>The dynamic subject/object may be acknowledged, but there is no specific reference to a method; in these cases, I called this stance TR2 (weak)</p>	<p>[T]here is some evidence on something, so they can't just choose, they have to actually research the evidence, what other theories there are out there, so, and there are ways of knowing, it just takes a while.</p>
	EBCR	<p>History is the interpretive work of the historian based on evidence; interpretation relies on specific disciplinary criteria</p> <p>Students are aware of what these criteria are about; they do not necessarily know how to use them.</p>	<p>[W]hen you read something, like an historical document that was written by some of the historian, you need to understand and read between the lines to understand what he is saying and to understand what he or she is trying to do.</p>
	EB	<p>Epistemic ideas that do not fit previous categorizations.</p>	<p>[S]ome people have beliefs and so, kinda, sometimes there is proof about it, sometimes there is not.</p>
HT Statements dealing with how to know about the past (or make sense about evidence from the past).	HTYes	<p>Evidence of use or knowledge of heuristics signaling historical thinking.</p>	<p>[Y]ou have to know where a source is coming from to understand that it's biased.</p>
	HTNo	<p>Evidence of use or knowledge of heuristics clearly incompatible with historical thinking.</p>	<p>I don't even know what the historical method is and I can know history well, kind of.</p> <p>I didn't read it [the source of the document]. I don't know, it just it doesn't seem, it's not just like the same distance and font, and it's all together and that's separate, so like kind of, it is where it came from, I guess, it has the cite, so to me, where it came from, it could be a rumor</p>

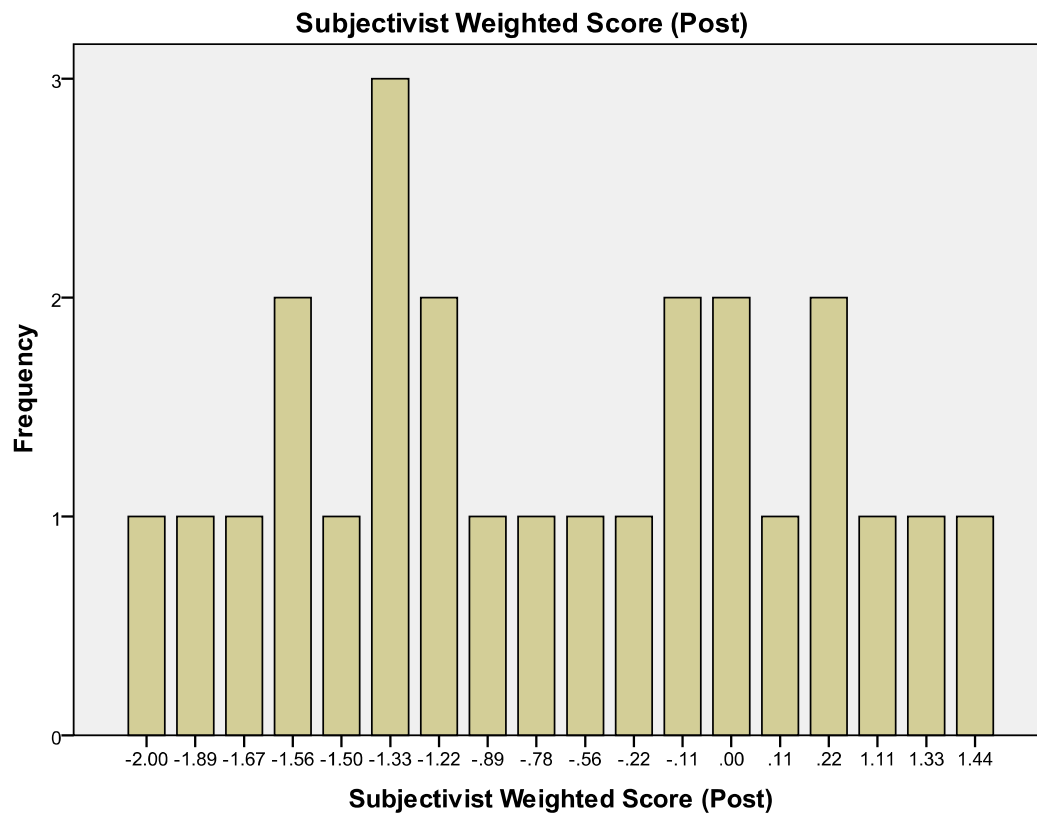
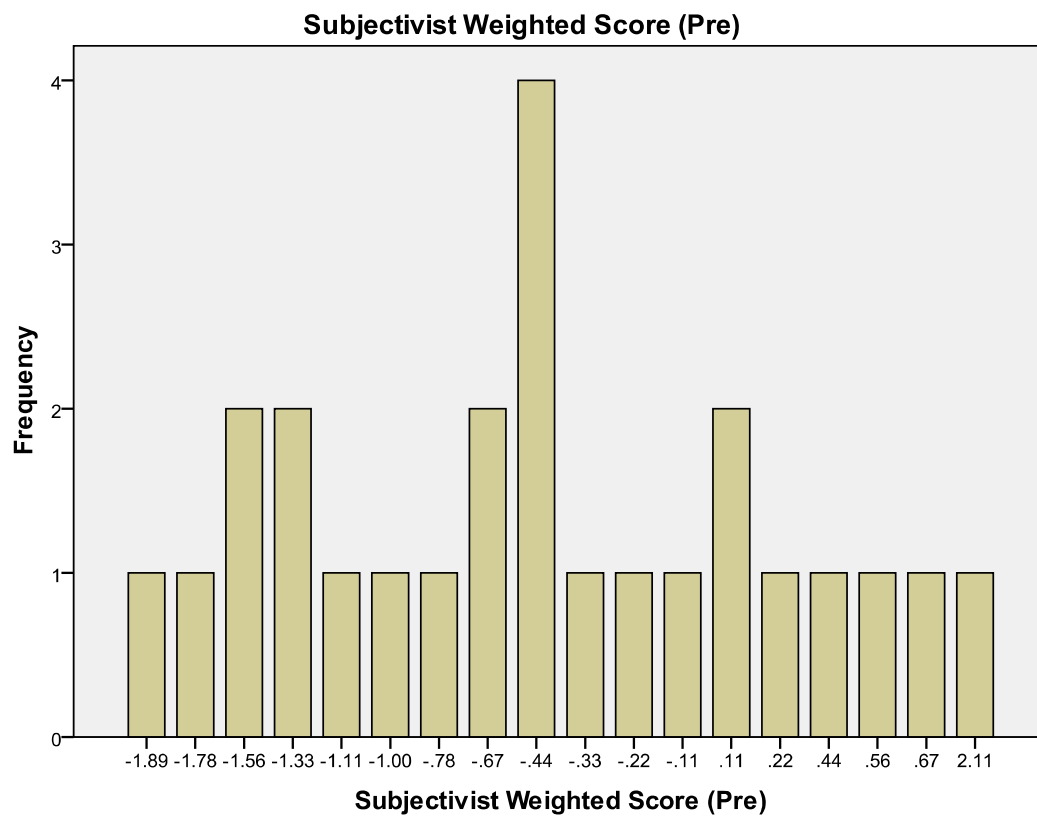
			or not, so to me it does not affect how I wrote my paper or anything like that, so I just never read that.
	CP	Copy and paste: selecting parts from different documents in order to build a more or less coherent story (no intertextual comparison; dismissal of conflicting evidence)	They believed that they, he was Lono, their great god that had promised to return and finally returned on his floating island and they believed it so much that they worshiped him as an actual god and not as a men, because as he said in document they wouldn't have done it for another human being, but what they gave him, gold, and sacrifice, and lot of stuff, lot of a great stuff.
	AQ	Building an answer to the task question	
	AA	Awareness of author (in the text). Signaled by use of personal pronouns (e.g., he, they)	
DO Strategies employed while responding to the task that are not typical of thinking historically, although they may sometimes be helpful Examples: Local and global restating; interpreting; elaborating; re-reading; asking meaning of words; visualizing			
OTHER	MOT	Reasons supporting the use of arguments based on evidence. May be intrinsic (INTR), i.e., the use of evidence and argumentation is important for the respondent himself/herself, or extrinsic (EXTR),i.e., the use of evidence and argumentation is important only in relation to others.	[Students need to be taught to deal with conflicting evidence] because they just go into big arguments and not get anywhere. [I]n schools you always need to support your answers to get the best grade possible.

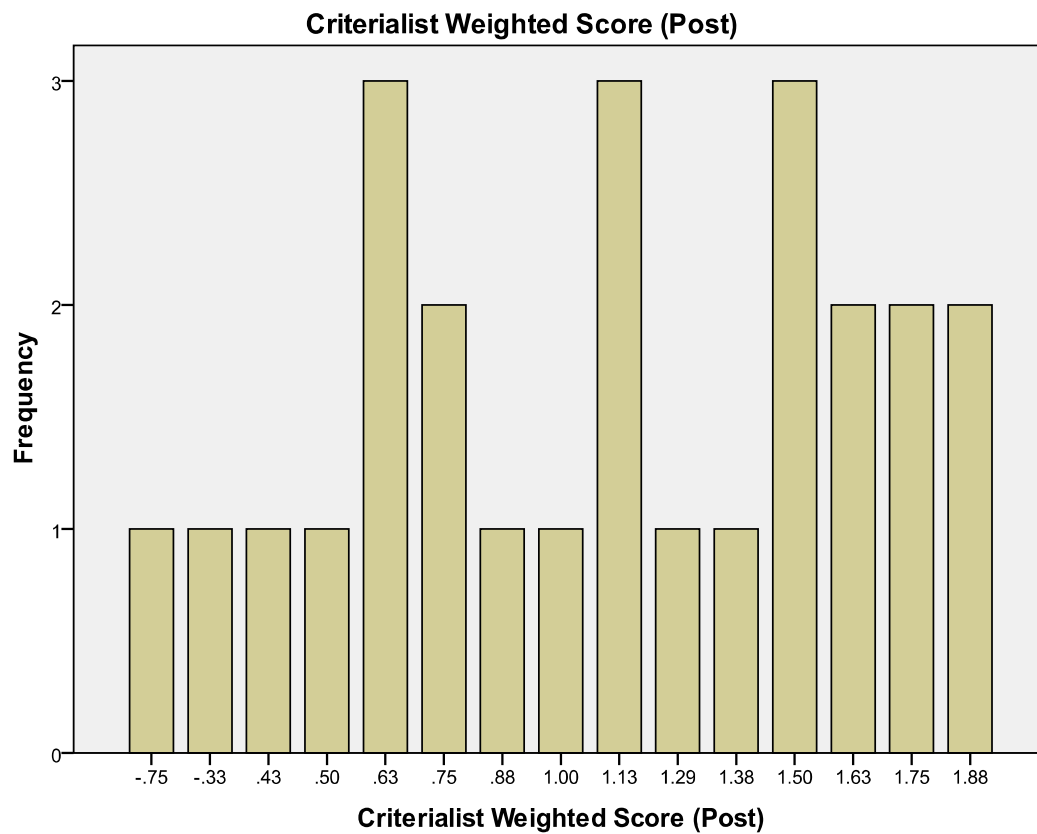
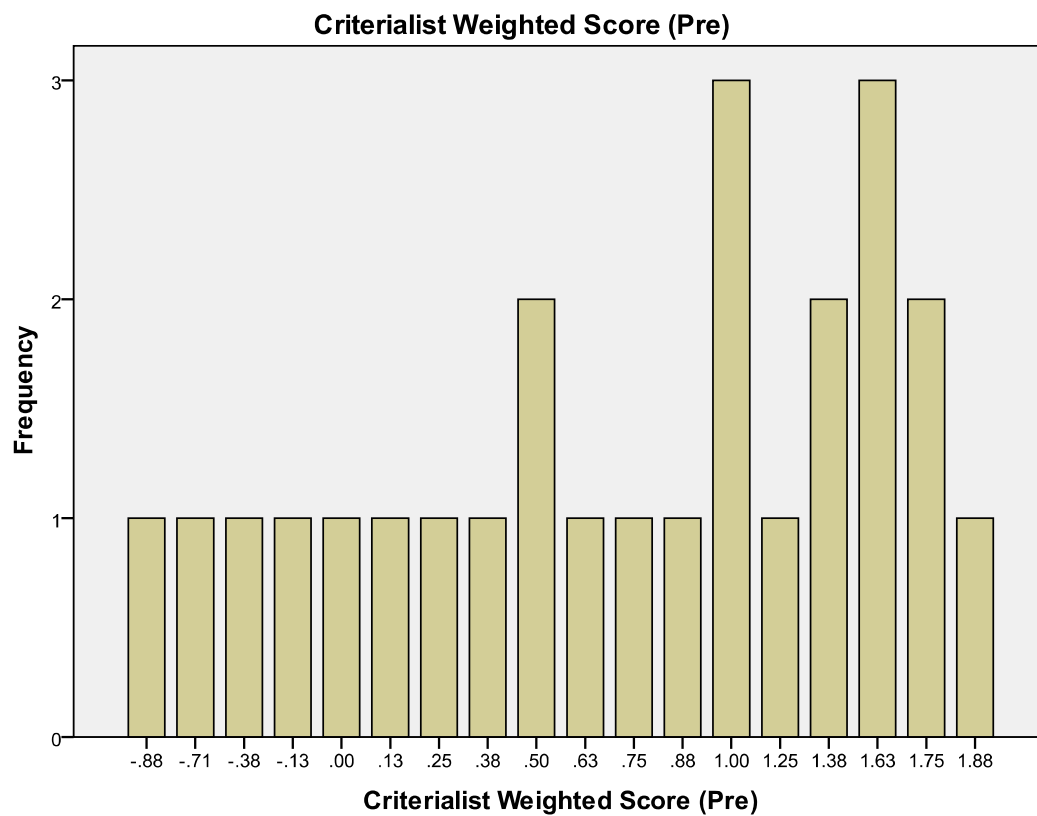
	PED	Mention of pedagogical practices potentially influencing epistemic ideas or historical thinking.	<p>I learn better by playing games, like the jeopardy she did, but some people can just read a book, I can't do that, just pick up information, I need to have hands-on, I can't just read the book.</p> <p>[W]e have the textbooks and everything, different people wrote it and so they have different opinions about things, some do have the same ones, so if we don't understand what they are talking about we don't get their viewpoint of it, then we don't understand what is going on.</p> <p>[I]t is easier if someone explain to you what happened, it's easier to picture things happening and what happens, the reasoning behind why it happens than just read about that and understand it.</p>
	T	Statements dealing with the correspondence of history to the truth about the past (the word truth or true has to be used)	In the context of the curriculum, I believe there is a certain amount of truth that is set in stone, like the events that happened, but the only way to, I guess, to come upon this truth is by reading and learning from different interpretation of it.
	CER	Statements dealing with the certainty of historical knowledge (the word certain, sure, or some close synonym has to be used)	<p>[Y]ou didn't know this person and so you cannot say for sure was he good or was he bad, just some evidence supports it, and you cannot find all the evidence and then, well, it's just, for example if you take this time of period that happened long, long ago and a lot of evidence is destroyed or lost, in this town, you cannot be sure about things.</p> <p>I believe that there is a certain amount of doubt, there is, very small shred of doubt that can always exists because none of us was there, but there're I believe fairly reliable ways to recreate, or gaining knowledge about historical event.</p>
	NC	No code (not understandable; comment not pertinent to the research; just a repetition of the prompt; the participant says too little to interpret the meaning of the comment)	

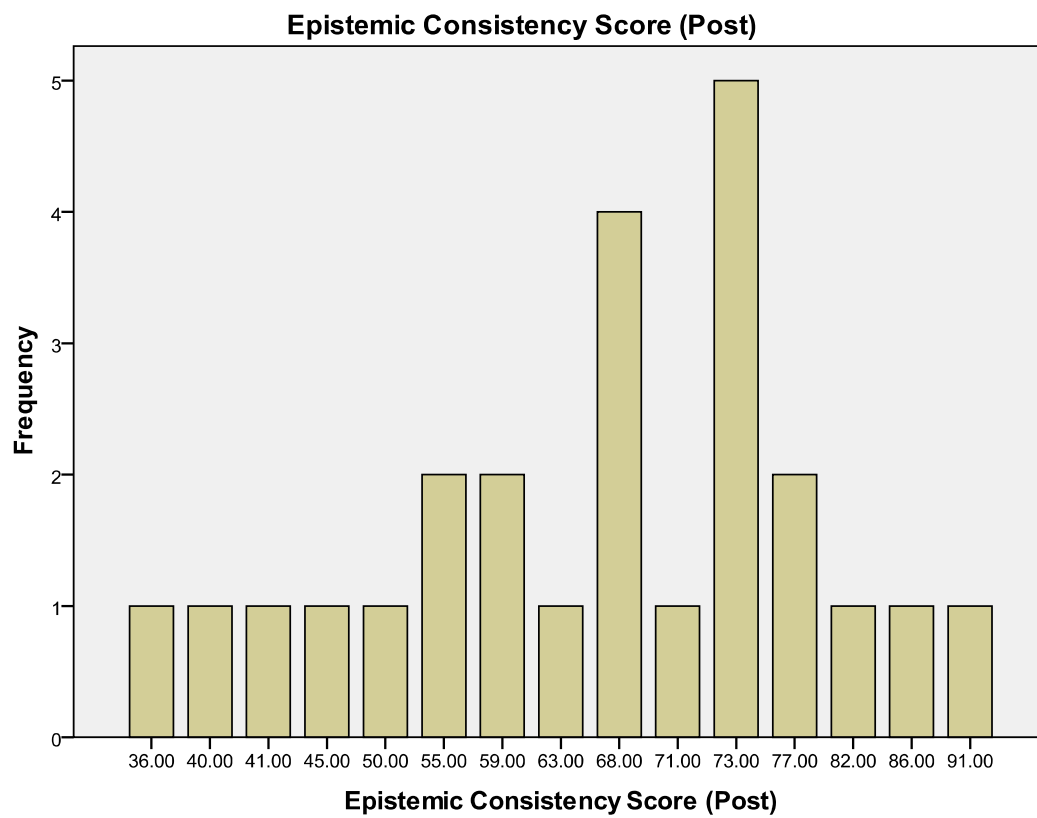
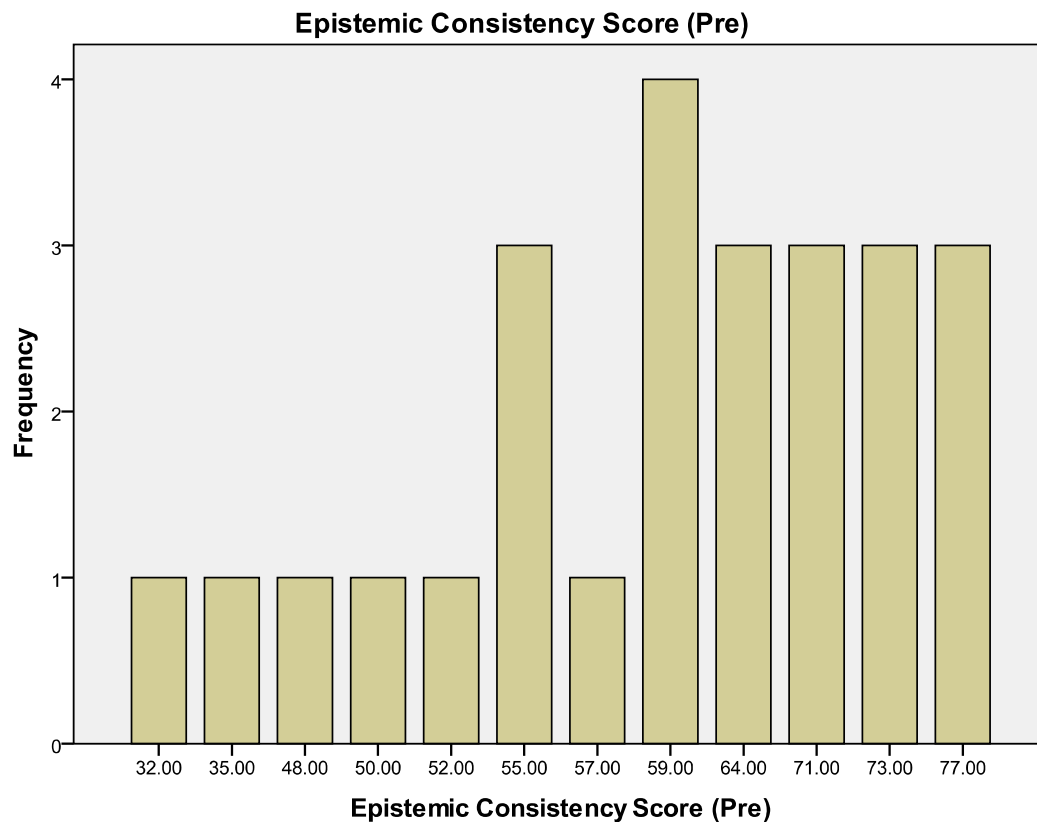
APPENDIX I

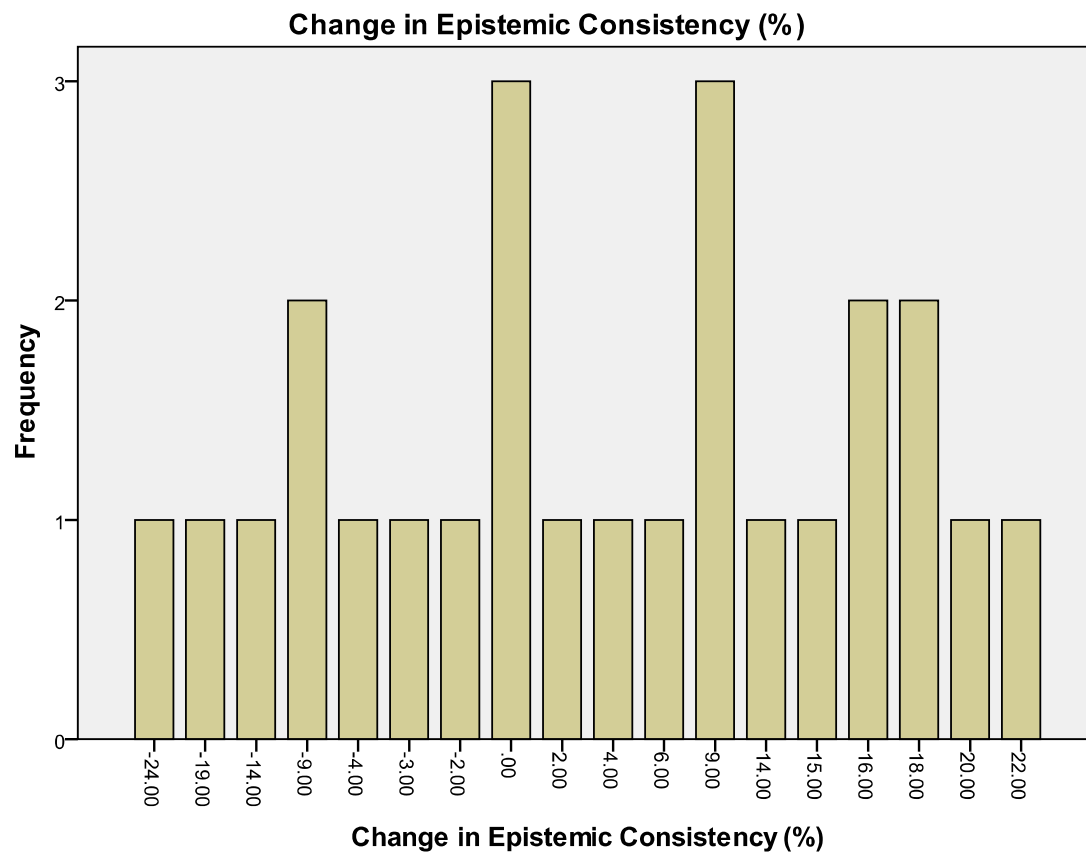
Lauren's Class: Students' Epistemic Beliefs Bar Graphs











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