A theory-building approach to the study of medieval history in grade four

Monica Resendes & Maria Chuy Institute for Knowledge Innovation and Technology University of Toronto

Abstract: This study examined the historical reasoning of Grade 4 students exploring medieval times using a Knowledge Building approach and Knowledge Forum technology. Discursive analysis of student contributions was conducted according to six critical aspects of historical reasoning: *asking historical questions, contextualizing, argumentation, using substantive concepts, using meta-concepts, and using historical sources.* Students engaged in all major aspects of mature work in historical analysis, suggesting that Knowledge Building pedagogy and technology are conducive to mature historical reasoning. Results also pinpoint components of less developed attributes that require further pedagogical support and suggest ways to further promote effective knowledge construction in history.

Introduction

For over two decades, studies in history education have highlighted pedagogical problems that stem from traditional ways of teaching history that rely on textbooks and conventional narratives about the past as dominant educational tools (e.g., Shemilt, 1980; Wineburg, 2001). Textbooks typically display historical facts in a "readerly" manner, and the facts they contain often appear unproblematic (Lévesque, 2008). This leads to the perception, held by many students, that history is a fixed collection of facts (Lee, 2004). Accordingly, students have no basis for understanding how historians actually think or how they work to make sense of and construct historical knowledge.

Contrary to the popular belief that history is as a collection of fixed facts, theoretical explanations are central to historical inquiry (Fulbrook, 2002). As noted by Wilensky (1983) and McCullagh (1984), inquiring historians often work within an "explanation space" (10) where they grapple with ill-structured problems and work towards reinterpreting, reconstructing and re-solving problems, enabling us to see "old facts" in a "new light". When doing this, historians rely on the concept of explanatory coherence (Thagard, 1989, 2006), which demonstrates how well a particular theoretical proposition explains a set of established facts. Coherent historical explanations can be achieved only through continuous questioning, evaluation, analysis, and corroboration of historical phenomena. The ability to create coherent explanations becomes especially critical for addressing historical questions with no correct answer, and for justifying theoretical claims. Thus, the objective of this study was to explore what aspects of historical reasoning help young students to develop coherent explanations and under what conditions these aspects can be developed.

Van Drie and Van Boxtel (2008) propose a framework for conducting empirical analysis of historical reasoning that includes six critical aspects: (1) *asking historical questions*—a core competency in the domain that "drives" historical reasoning; (2) *contextualization*—required to interpret and make sense of historical phenomena; (3) *argumentation*—supporting claims with valid reasons, (4) *using substantive concepts*—those that name and organize historical phenomena (e.g. 'serf' or 'Middle Ages'); (5) *using meta-concepts*—those that deal with broader historical phenomena (e.g. cause and consequence) (6) *using historical sources*—which involves the interpretation, evaluation and comparison of primary and secondary sources. These aspects are fundamental to high-level historical reasoning and a provide basis for developing students' capacities to produce coherent explanations.

So what are the pedagogical practices that would help to develop these six aspects of historical reasoning in students? In this study, we choose to focus on a Knowledge Building (KB) pedagogical approach (Scardamalia and Bereiter, 2003) to historical inquiry. This approach is defined as '*the production and continual improvement of ideas of value to a*

community' (Scardamalia and Bereiter, 2003: p. 1370). Knowledge Building is expected to be particularly conducive to the development of historical reasoning because it requires students to continually propose and improve their own working theories, a pedagogical practice that is central to genuine historical inquiry. Knowledge Building is supported by Knowledge Forum (KF), a multi-media platform where students contribute ideas, questions, evidence, and so on, as multimedia notes into a collective knowledge space (www.ikit.org, see Scardamalia, 2004 for more detailed description).

Benefits of engaging in Knowledge Building discourse associated with gains in explanation-based inquiry have been demonstrated (Zhang et al., 2007), but this study will be the first to address the following questions: What aspects of historical reasoning were fostered in the setting under investigation? Which critical aspects remain unaddressed or underdeveloped, and thus require additional support? And finally, does sustained engagement in Knowledge Building help young students develop competencies in historical reasoning, as evidenced through sophisticated explanations of historical phenomena?

Method

Participants

Participants included 21 Grade 4 students (9-10 years) attending a primary school located in downtown Toronto. Knowledge Building and KF were introduced to students as early as junior kindergarten.

Classroom Structure

The Grade 4 teacher was new to both Knowledge Building and KF prior to this unit of study, which spanned approximately three months. During this time the class engaged in Knowledge Building for three hours a week for 45-60 minutes at a time. Students used KF in tandem with "KB talks" and active research. During this time, students discussed their ideas, questions, theories, and research on medieval times. The teacher allowed the study to grow organically, situating herself as a co-learner with the students. Responsibility for advancing individual and collective knowledge remained with the students as they worked to produce and improve their own ideas about medieval history. At the end of every Knowledge Building session, students were given 10-15 minutes to enter any new information or knowledge generated during in-class discussion and research into the KF database.

Knowledge Forum environment

In the KF online environment, students contributed ideas, questions, evidence, and so on, as multimedia *notes* into a shared knowledge space. Students could organize notes thematically into *views*, which served as workspaces for various inquiry goals. Students could *build on*, *annotate*, and *co-author* notes, make *reference* links to other notes, and create *rise-above* notes, which represented higher-level conceptualizations. KF also features theory-building scaffolds, which are customizable verbal prompts that are designed to favor certain types of discourse. Through their use, KF can provide a unique environment to engage students with the critical aspects of historical reasoning. For example, the "constructive use of authoritative sources", one of the twelve underlying principles of Knowledge Building (see Scardamalia, 2002) encourages engagement with and *use of historical sources* to facilitate the processes of improving ideas and constructing explanations. Similarly, *asking historical questions* is supported by the scaffold, "I need to understand", which helps students formulate questions that other students can take up.

Plan of Analysis

The study focuses on discourse analysis of student contributions for understanding medieval history. As indicated above, contributions are reflected in student notes generated over a 3-month time span and archived in Knowledge Forum. Over that period, 550 notes were generated across 13 views. All 13 views were subject to analysis, and individual notes were coded according to the six aspects of historical reasoning outlined previously. The critical attributes for each aspect, used to rate student notes, are presented below (see Appendix for more detailed description of each aspect and its corresponding attributes).

Asking historical questions: Questions were classified into two main categories: i.) factseeking and ii.) explanation-seeking. Fact-seeking questions are those that call for isolated pieces of information. Explanation-seeking questions, as described by Hakkarainen (2003), ask deeper "how" and "why" questions and are particularly conducive to knowledge building dialogue. In this study, we equate explanation-seeking questions with Van Drie et al.'s (2006) notion of evaluative historical questions, which call for students to explain and justify their reasoning with respect to the question being posed. For example, the fact-based question "When did the Dark Ages begin?" becomes evaluative when changed to "When do you think the Dark Ages began?" In a Knowledge Building context, both of these questions can be explanation-seeking because they are asked within a communal space of inquiry that allows for students to propose various responses, including their own theories. Explanation-seeking questions were seen as evidence of higher-level historical reasoning than fact-seeking questions.

Contextualization: Evidence of this aspect was broadly defined as engagement with any or all of the three basic frames of reference, as outlined by De Keyser and Vandepitte (1998): i.) social, which deals with socio-economic, political and cultural conditions; ii.) spatial, including considerations of geographic concepts, locations and scale; and iii.) chronological, which deals with the organization of historical time and significant events. We did not designate levels within this aspect itself.

Argumentation: Argumentation in historical inquiry is distinct from giving an opinion in that it requires the persuasive use of sources as evidence to support or refute a particular historical claim or theory. As such, we looked for evidence of this aspect on the basis of the following criteria, as outlined by Voss and Means (1991): the argument is plausible in that it can be seen as true or valid according to the evidence presented; it is coherent, in that it provides multiple supports to back up a conclusion; it accounts for counter-arguments and contradictory information.

Using substantive concepts: Substantive concepts are concepts that name and help organize historical phenomena. In this study we looked for evidence that students used substantive concepts suitably within a historical context, whether they utilized substantive concepts in efforts to *build* a historical context, and whether students used multiple substantive concepts in relation to one another in their effort to construct coherent explanations.

Using meta-concepts: The use of meta-concepts in the process of historical inquiry is often implicit for students (Lee et al.1998). In this study, use of meta-concepts in students' naturally-occurring dialogue was analyzed according to an adapted version of the "Benchmarks of Historical Thinking" (Seixas, 2006). The Benchmarks outline the following foundational meta-concepts: i.) *historical significance,* which includes exploring why some historical phenomena are considered more important than others ii.) continuity and change, which explores patterns of change over time iii.) cause and consequence, which explores the "how" and "why" of historical phenomena iv.) *historical perspectives,* which requires exploring multiple and often mystifying viewpoints in order to understand the past v.) moral judgment, which explores questions of ethical concern and how they ought to be taken up (see Denos and Case, 2006 for more detailed information). We have omitted use of sources as

a meta-concept here because this heuristic stands alone as a distinct aspect in our overall framework.

Using Historical Sources: For this aspect we analyzed the nature of student engagement with historical sources. We looked for whether students introduced or described new information, and whether sources were used to reference a theory or idea, or as evidence to support a particular theory or argument. We also looked for whether sources were evaluated as evidence, and whether multiple sources were compared to one another. Sophisticated use of sources was defined as questioning, assessing or corroborating sources as evidence in the effort at producing sound explanations.

In addition to these six categories, we added a seventh—*theorizing*. Because a central objective of Knowledge Building is the creation and continual improvement of theories, this category was necessary to include as a characteristic element of student dialogue. This category allowed us to detect how often students proposed theories to explain historical phenomena, how often they worked to improve these theories, whether they supported already existing theories with justifications, or sought alternative theories.

It is important to note that these aspects are far from mutually exclusive. They form distinct categories here only for analytical purposes. Because these aspects are highly interrelated, notes that contained evidence of more than one aspect were coded with all relevant categories. For example, a note that reads: "Why is class distinction so important? My theory is because the nobility had power over the other people" was marked as exhibiting the following aspects: i.) *asking historical questions* (explanatory), ii.) *contextualizing* (social) iii.) *using substantive concepts* (e.g. nobility) and iii.) *theorizing* (proposing a theory). The most complex view, entitled "Medieval Times" and consisting of 18.36% of the total notes in the database, was analyzed independently by two raters with the result of 80% agreement. To resolve the 20% disparity, raters discussed the discrepancies and thereby attained full agreement. Having established a precedent for coding, the remaining 12 views of the database were coded by one researcher.

Results and Discussion

General statistics

The outcomes of this study reveal evidence of student engagement with all 6 critical aspects of historical reasoning (see Figure 1). Analysis revealed that the overwhelming majority of contributions to the database showed engagement with *contextualizing* and the use of substantive concepts. As shown in Table 1, 76.72% of student contributions showed efforts at building historical contexts. Most of these contributions constituted efforts aimed at building social contexts (33.45%). In addition, 44.18% of notes exhibited relevant use of substantive concepts in an effort to clarify or advance students' own prior knowledge about these concepts and to construct meaningful historical contexts around them. Additionally, 32.18% of notes included questions, and of those, 26.36% were of an explanatory nature, with 5.82% of a factual nature. With respect to the aspect of using historical sources, which appeared in 30.36% of student contributions, the majority of notes fell under the subcategory of describing or introducing facts (25.81%). The use of meta-concepts shows the second lowest evidence of engagement in the database, with 24% of student notes exhibiting this aspect. Of the notes that exhibited this aspect, 9.63% engaged continuity and change, 6.72% cause and consequence, 5.45% historical perspective, 1.81% historical significance and less than 1% moral judgment. Less present, but still quite high for this age is the number of notes demonstrating argumentation (8%). Of the components of argumentation, students most often supported claims with plausible reasons (4.91%), a small number of students made

counter-claims (3.09%), and no students showed evidence of *weighing multiple claims* nor *accounting for counter-claims* (0%).



Figure 1. Total percentage of notes that showed evidence of the corresponding six aspects

Main aspect	% of total notes	Critical attribute	% of total notes
Asking historical questions	32.18	Factual	5.82
		Explanatory	26.36
Contextualizing	76.72	Social	33.45
		Spatial	3.27
		Temporal	10.18
Argumentation	8.18	Supporting a claim with valid reasons	4.91
-		Weighing multiple claims	0
		Making a counter-claim	3.09
		Accounting for counter-claims	0
Using substantive concepts	44.18	Use of substantive concepts relevant to historical	44.18
		period	
Using meta-concepts	24	Historical significance	1.81
		Continuity and change	9.63
		Cause and consequence	6.72
		Historical perspective	1.81
		Moral judgment	0.18
Using historical sources	30.36	Describing or introducing new facts	25.81
		Seeking sources	2.72
		Using a source to support or refute an idea	1.81
		Comparing multiple sources	0
		Evaluating a source as evidence	0

Table 1: Total percentage of notes engaging each of the 6 main aspects and their critical attributes.

Qualitative analysis of inquiry threads

From the total notes produced in the database, 43.45% of student contributions showed evidence of theorizing. Close examination of these notes demonstrated that with help of

Knowledge Building pedagogy, 9-10 year old students were not only able to propose their own theories to explain historical phenomenon (29.45%), but also to perform work on *theory improvement* (5.27%.) Students contributed an equal number of notes that served to *support theories* with justifications and to *seek out alternative theories* (4.36%).

Close examination of notes exhibiting this aspect reveal that collaboration helped to increase sophistication of explanations. Thus, in order to help interpret how sustained engagement in Knowledge Building dialogue can help students to produce more sophisticated explanations, we have chosen two higher-level explanations and have traced their development through two separate but related inquiry threads (Zhang, 2004), which can be explained as a series of notes that deal with particular problem of understanding. The first thread deals with attempts at understanding the actions of king John, and the second with the emergence of democracy. The first exchange to be examined took place on the KF database view entitled "Government". 6 different students participated in the conversation over twelve days.

VC: Why was King John so meen? why did he kill so many people? Why didn't he want to sign the Magna Carta. My theory: he wanted his freedom so that he could do anything he wanted.

VC: My theory: he had so much power he thought he could do anthing! And he didn't want to let his freedom go.

GP: I think that john was the bad son, he stole land and killed people!

MH: but then came the magna carta.

NW: King Richard wasn't bad at being a king John was.

VC: John sighed the Magna Carta because he wanted the nobles off his back!

DC: why was he so bad?

GS: My theory: I think that he loved being powerful and when the lords formed a council to prevent that fom happening and he didn't want to stop just because the lords said so.

Implicit in VC's initial questions about the character and actions of king John is the meta-concept of *cause and consequence*, which guides the following line of inquiry. In response to the student's own queries, VC proposes a theory that explains the cause of the king's actions as his thirst for power and "freedom". GP offers a similar type of response, branding king John as the "bad son" who "stole land and killed people". A number of studies show that young students typically explain historical action in terms of personal motivations and wants, with simple cause and effect patterns (e.g., Carretero et al. 1997, 1994; Halldén 1993, Rivière et al., 1998). These first two theories reflect these findings in that they focus on a simple characterization of king John and explain his actions as a result of his own "kingly" desires. However, MH's contribution, which re-introduces the Magna Carta into the conversation, changes the direction of the discussion and compels the other students to produce higher-level theories. It is interesting to note that this same student makes an explicit link between the Magna Carta and the idea of democracy in the conversation at hand appears

to problematize the portrayal of king John as the "bad guy", as its existence seems to suggest to these students an action uncharacteristic (and therefore benevolent in some respect) of this king. Subsequent theories begin to address other agents or forces besides king John himself. For example, after MH states "but then came the magna carta", VC offers the idea that the king signed the document in order to "get the nobles off his back". While this explanation still places the king's desires as the root cause of his actions, this student has begun to *contextualize* the king's actions within his particular situation and take into account external influences as a motivating factor behind his actions. GS elaborates on this theory, including additional details about relevant events ("the lords formed a council") and employing more substantive concepts in the process. GS's explanation implicitly suggests that situational constraints could have both driven and impeded John's agency as king. In a large-scale research project aimed at exploring children's explanations of historical action, Lee et al. (1997) found that the majority of 7-11 year olds have trouble grasping how the historical agent might have been either constrained or empowered by broader external factors and systemic forces – what they call "situational analysis." In the exchange presented here, we see evidence of 9 and 10 year old students moving to higher-level explanations as they begin to take into account not simply the king's own feelings but the way in which his particular historical circumstance may have effected his actions. This study corroborates the claim that 9 and 10 year olds could offer plausible explanations of historical action, and suggests that when engaged in Knowledge Building dialogue, young students are capable of higher-level explanations that move beyond personalistic explanations and begin to engage a broader historical context.

The second inquiry thread under consideration involves a concurrent discussion that takes place in the same view ("Government") as the inquiry detailed above. Two of three students involved in the following example were also involved in the previous dialogue. In this discussion, students work together to clarify the concept of democracy and try to understand it in relation to what they know about medieval governance (e.g. kingship). As with the above example, this discussion begins with a question and an initial theory:

GP: Why did the demacratic system come so late? My theory is that the king liked having the power.

HW: What is the democratic system?

GP: It's like the government.

MH: I can answer the democratic system is wrere every one can vote and have a voice.

MH: I think that the demacratic systom came late because the magna carta was not inveted.

In GP's initial theory we see again an explanation that attributes the cause of the "late" emergence of democracy as the king's own personal desire for power. GP's question, however, offers HW the opportunity to build a better understanding of the concept of democracy. A very valuable aspect of both Knowledge Building and KF in historical inquiry is the opportunity both the pedagogy and the technology give to students to try to make sense of substantive concepts. Research shows that students often have difficulty understanding substantive concepts because of their abstract and theoretical nature as well as to the fact that they change depending on historical context (e.g. "democracy" can mean one thing to the

Ancient Greeks and quite another to 21st century Canadians) (Van Drie and Van Boxtel, 2003; Limón, 2002). In this discussion, the concept of democracy is not understood by the students as having multiple meanings, however, they are nevertheless making an explicit attempt to understand the relationship between their own current form of government and that of the period they are studying. In this respect, this line of inquiry is characterized by two meta-concepts, *cause and consequence* as well as *continuity and change*. In response to the initial question "why did the demacratic system come so late?" MH uses the Magna Carta as a historical precedent which helped to lay the foundations for a system of government where "everyone has a voice". The ability to attribute remote causes to historical phenomena is characteristic of more sophisticated historical reasoning (De Keyser and Vandepitte, 1998). Although MH's explanation is brief and accounts for a single causal factor, the attempt to understand democracy in relation to what the student perceives to be a relevant historical event, the Magna Carta, as well as the nature of its historical influence, is impressive for a student of this age group.

Conclusion

The study presented here explores how sustained engagement in Knowledge Building dialogue can help young students to build sophisticated explanations for historical phenonema. In sum, analysis suggests that 9-10 year old students are interested in building *social contexts* and are very capable of using a high number of *substantive concepts* to this end. Furthermore, data reveals that students tended to pose a high number of historical questions, mostly of an *explanatory* nature. These outcomes suggests that young students using a KB approach to history are capable of building meaningful contexts using relevant historical concepts around deep questions or problems of understanding. While engagement with these aspects in students naturally-occurring dialogue is quite high, teachers can help students to make deeper connections between these aspects the following three aspects of historical reasoning which appear to require more fine-tuned support.

As mentioned, data indicates that students require more support in the remaining three aspects of historical reasoning – *using historical sources, using meta-concepts* and *argumentation*, respectively. For example, the majority of notes coded as *using historical sources* consisted of students introducing new facts. This discursive move often inspired vivid discussion and questioning, and as such plays an important role in fostering students' inquiry. However, low engagement with all other attributes of this aspect is reflective of research showing that sophisticated use of historical sources is one of the greatest challenges students face (Wineburg, 2001; Levesque, 2008). Although one cannot reasonably expect young students to display sophisticated competencies in such complex processes, engagement with both secondary and primary sources has been shown to promote a higher level of critical thinking and improved comprehension in students (Callison and Saunders-Brunner, 2004; Dutt-Doner, Cook-Cottone, Allen, 2007). Thus, recommendations to teachers would be to encourage students to consult and question both secondary and primary sources as a fundamental practice in their historical inquiry.

In addition, this study shows that 9 and 10 year old students are able to generate a substantial amount of notes that engage important *meta-concepts*, particularly those that deal with *continuity and change* and *cause and consequence*. However, the level of engagement with *historical significance* and *historical perspective* is low, or in the case of *moral judgment*, non-existent. This suggests that support geared to all six *meta-concepts* is needed in order for students to move from implicit to more explicit understandings of what helps to shape a productive line of historical inquiry. Making these meta-concepts explicit and organizing inquiry around them is the objective of a number of current initiatives and projects

in history education, including discipline-oriented teacher handbooks (see Denos and Case, 2006) and innovative websites (*Great mysteries in Canadian history*, n.d.; *The virtual historian*, n.d.).

Finally, specialized support is also needed to encourage more sophisticated work with *argumentation* such as *weighing multiple arguments* and *accounting for counter-arguments*. As research shows, *argumentation* is a very difficult aspect of historical reasoning for young students (Spoehr & Spoehr, 1994; Lee & Ashby, 2000; Van Drie et al. 2006). However, it is promising some students were able to generate a claim and support it with valid reasons while a small number also made counter-claims. Knowledge Building as an educational approach emphasizes community knowledge sharing as well as idea diversity, which could potentially help young students to grapple with contradictory historical information. However, further work in this area is needed to substantiate any such claims.

To conclude, this study has aimed to provide an initial exploration of how Knowledge Building can be used to help develop competencies in historical reasoning in young students. Because little research has been conducted in the area of Knowledge Building and history, we hope to build onto these results with further work that will focus on the problem points discussed here. We also wish to use these results to inform designs for improvements in KF software (for example, the production of scaffolds fine-tuned for historical inquiry) in order to raise the level of student dialogue and reasoning in the discipline.

References

- Carretero, M., & Voss, J. F. (Eds.) (1994). Cognitive and instructional processes in history and the social sciences. Hillsdale, NJ: Erlbaum.
- Carretero, M., López-Manjón, A., & Jacott, L. (1997). Explaining historical events. International Journal of Educational Research, 27(3), 245–254.
- Callison, D., & Saunders-Brunner, M. (2004). Primary sources. *School Library Media Activities Monthly*, 20(10), 29–32.
- Denos, M., & Case, R. (2006). *Teaching about historical thinking*. (P. Seixas & P. Clark, Eds.). British Columbia: The Critical Thinking Consortium.
- Dutt-Doner, K., Cook-Cottone, C., & Allen, S. (2007). Improving Classroom Instruction: Understanding the Developmental Nature of Analyzing Primary Sources. *Research in Middle Level Education*, 6 (30).
- De Keyser, R., & Vandepitte, P. (Eds.) (1998). Historical formation. Design of vision. Brussel, Belgium: Flemish Board for Catholic Secondary Education.
- Fulbrook, Mary. (2002). *Historical Theory: Ways of Imagining the Past*. Routledge: London.

Great Mysteries in Canadian History. (n.d.) Retrieved from

http://canadianmysteries.ca/en/index.php

- Hakkarainen, K. (2003). Progressive Inquiry in a Computer-Supported Biology Class. Journal of Research in Science Teaching, 40(10), 1072 – 1088.
- Halldén, O. (1997). Conceptual change and the learning of history. *International Journal of Educational Research*, 27, 201–210.
- Lee, P. (2004). Historical literacy: Theory and research. Paper presented at the *History Education International Research Network Conference*. Ambleside: UK.
- Lee, P., & Ashby, R. (2000). Progression in historical understanding among students age 7 14. In P. N. Stearns, P. Seixas, & S. Wineburg (Eds.) Knowing, teaching, and learning history. National and international perspectives (pp. 199–222). New York: New York University Press.
- Lee, P., Dickinson, A., & Ashby, R. (1998). Researching children's ideas about history. In J.

F. Voss, & M. Carretero (Eds.) Learning and reasoning in history. International review of history education (Vol. 2) (pp. 277–251). London: Woburn.

- Lee, P., Dickinson, A., & Ashby, R. (1997). "Just another emperor": Understanding action in the past. International Journal of Educational Research, 27, 233–244.
- Lévesque, S. (2008). *Can computational technology improve students' historical thinking: experience from the <u>Virtual Historian</u>*. Paper presented at the Annual Meeting of the American Educational Research Association, 28 March 2008, New York City.
- Limón, M. (2002). Conceptual change in history. In M. Limón, & L. Mason (Eds.) Reconsidering conceptual change. Issues in theory and practice (pp. 259–289). Dordrecht, The Netherlands: Kluwer.
- McCullagh, C. B. (1984). *Justifying historical descriptions*. Cambridge University Press: New York.
- Rivière, A., Nunez, M., Barquero, B., & Fontela, F. (1998). Influence of intentional and' personal factors in recalling historical texts: A developmental perspective. In J. F. Voss, & M. Carretero (Eds.) Learning and reasoning in history. International review of history education (Vol. 2) (pp. 214–226). London: Woburn.
- Scardamalia, M. (2002). Collective cognitive responsibility for the advancement of knowledge. In B. Smith (Eds.), *Liberal education in a knowledge society* (pp. 76-98). Chicago: Open Court.
- Scardamalia, M. (2004). CSILE/Knowledge Forum. In *Education and technology: An encyclopedia* (pp.183-192). Santa Barbara: ABC-CLIO.
- Scardamalia, M., & Bereiter, C. (2003). Knowledge building. *Encyclopedia of education*, (2), 1370-1373.
- Schreiber, W., Körber, A., Von Borries, B., Krammer, R., Leutner-Ramme, S., Mebus, S.,
- Schöner, A., & Ziegler, B. (2006). Historisches Denken. Ein Kompetenz Strukturmodell. Historical Thinking. A model of compentences] Ars una, Neuried, Germany.
- Seixas, P. (2006). *Benchmarks of historical thinking: A framework for assessment in Canada*. Retrieved 5 October, 2009, from http://www.histori.ca/benchmarks/
- Shemilt, D. (1980). Evaluation study: Schools Council History 13–16 Project. Edinburgh: Holmes McDougall.
- Spoeher, K. T., & Spoeher, L. W. (1994). Learning to think historically. *Educational Psychologist, 29,* 71.
- Thagard (1989). Explanatory coherence. Behavioral and Brain Sciences, 12, 435-467.
- Thagard, P. (2006). *Hot thought: Mechanisms and applications of emotional cognition*. Cambridge, MA: MIT Press.
- The Virtual Historian. (n.d) Retrieved from http://www.virtualhistorian.ca/
- Wilensky, (1983). *Planning understanding: A computational approach to human reasoning*. Reading, MAS: Addison-Wesley.
- Wineburg, S. (2001). *Historical Thinking and Other Unnatural Acts: Charting the Future of Teaching the Past*. Philedelphia: Temple University Press.
- Van Boxtel, C. A. M., Van der Linden, J., & Kanselaar, G. (2000). Collaborative learning tasks and the elaboration of conceptual knowledge. *Learning and Instruction 10*, 311 330. *Research*, 4(2), 89-97.
- Van Drie, J., & Van Boxtel, C. (2008). Historical reasoning: towards a framework for analyzing students' reasoning about the past. *Educational Psychological Review*, 20, 87–110.
- Van Drie, J., & Van Boxtel, C. (2003). Developing conceptual understanding through talk and mapping. *Teaching History*, 110, 27–32.
- Van Drie, J., Van Boxtel, C., & Van der Linden, J. L. (2006). Historical reasoning in a computer-supported collaborative learning environment. In A. M. O'Donnell, C. E.

Hmelo, & G. Erkens (Eds.) *Collaborative learning, reasoning and technology* (pp. 265–296). Mahwah NJ: Erlbaum.

- Voss, J. F., & Means, M. L. (1991). Learning to reason via instruction in argumentation. *Learning and Instruction*, 1, 337–350.
- Zhang, J. (2004). The growing networks of inquiry threads in a knowledge building environment. Paper presented at the Knowledge Building Summer Institute. Ontario Institute for Studies in Education, University of Toronto.

Appendix

Coding framework for analysis of discourse in individual notes.

Major category	Sub-category	Description of the category	Example
Asking historical questions	1—Explanatory questions	These ask deeper "how" and "why" questions and are particularly conducive to knowledge building dialogue	Why is class distinction so important?
	2—Factual questions	These questions call for isolated pieces of information that can be answered with factual statements.	What games did children play?
Contextualizing	3—Social	Entails knowledge of components of human behavior and social activity such as socio-economic, socio- political, and socio-cultural conditions of life	What were the beliefs back then? My theory is they thought the pope was a saint and they thought they should worship the pope as much as god
	4—Spatial	Entails knowledge about geographical concepts including locations and scale	Sorry, you're right Roger the Normans are the same as the Vikings but the Normans didn't have an empire but instead just had England while the Vikings had all of Scandinavia, Greenland and Iceland
	5—Temporal	Entails an organization of historical time and significant events	How was the Elizabethan times different from medieval times?
Argumentation	6—Supporting a claim with plausible reasons	The student puts forth an argumentative claim and provides plausible reasons to back it up.	What I think that is an important roll in the Medieval Times for women was their cloths. Because back then, women could only were dresses. That's it. Like Joan of Arc. She got burned at the stake for wearing men's cloths.
	7—Weighing multiple claims	Student considers various claims when proposing an argument	No examples
	8—Making counter- claims	Student makes a claim that introduces contradictory information or opposes an already existing claim.	I disagree with you because I read in a book that the medieval times lasted from 500 to 1500.I think that the 1600s were the Elizibethan times .
	9—Accounting for counter-claims	Student takes accounts for claims and counter-claims in the formulation and advance of an argument	No examples
Using substantive concepts	10—Use of relevant historical concepts	Student uses one or more relevant substantive concepts	Did the nobles' children have to work? My theory is they could if they wanted to but if they didn't they would stay home and get tutored. I think they would be a squire or apprentice. I don't think the noble girls would work.

Using meta- concepts	11—Historical Significance	Entails asking what constitutes a significant historical event? How do we decide on what is more or less significant? What criteria do we use to decide for whom an event/issue/person is (more or less) significant	Who was King Edward the Confessor? My theory is I think he was one of the Kings of England but what did he do special?
	12—Continuity and change	Challenges assumptions students might hold regarding the idea that there are no real significant differences between ourselves and people living in the past. Examines major and more subtle changes that have occurred over time, and appreciates that our understandings of each are informed and shaped by our own historical time and place.	Did the Jews in the medieval times follow the same laws they do now? Did the Jews in the Medieval Times follow the same laws they do now? My theory: I don't think so because times would have changed by now and so would religion
	13—Cause and consequence	Calls for investigating varying contributing influences in shaping historical events. Both structural and individual factors need to be considered. This concept also asks students to begin imagining themselves as actors within their own time and place - that is, within history.	When the Roman Empire fell a lot of knowledge was lost. No new inventions were made because no one could remember the knowledge that Romans had (Romans made lots of inventions). The fall of the Roman empire started the Dark Ages.
	14—Historical perspective	Entails understanding the social, cultural, political, and emotional context that shaped the lives of people living in the past is essential in order to gain any sort of historical perspective. To avoid a simplistic view of the past, students need to appreciate how people understood their own time and how they saw themselves within it.	Actually back then they were very stylish clothes so I wouldn't call them goofy. Also I think that he wasn't in the medieval times but in fact in the Elizabethan era
	15—Moral judgment	This concept involves students in considering the complex task of assigning moral judgments, including on historical events, actions or figures. It also calls for students to appreciate that forming ethical conclusions	Because the medieval rulers were usually barbaric idiots. Plus, they didn't have the U.N
Using historical sources	16—Introducing or describing a new fact	Student introduces or describes new information not related to existing theories or arguments	Some people thought that the body parts of saints were lucky. When a saint died, the people of the church would either burn them,

Using historical sources	16—Introducing or describing a new fact	Student introduces or describes new information not related to existing theories or arguments	Some people thought that the body parts of saints were lucky. When a saint died, the people of the church would either burn them, take out the blood or pull there bodies a part
	17—Seeking sources	Student indicates the need for a reference or an outside source to build on information or validate existing information	I agree with you ginger that we should read more but my! I need to understand what do you mean read more, what should we read about?
	18—Using a source to support or refute an idea	Student supports/refutes an existing idea by references information found in a specific source.	Yes. I agree. I have looked up castles on the internet, and I saw a ton of paintings on the castle walls.
	19—Comparing sources	Student compares two sources in an effort to make sense of conflicting or puzzling information	No examples
	20—Evaluating a source as evidence	Student interrogates the source itself, rather than the content (who wrote this, why might they write it, who is their audience, etc)	No examples
Theorizing	21—Proposing a theory	Student proposes an theory that attempts to explain a historical phenomenon	Is warfare all that Medieval Times is about? My theory: I think that warfare isn't all that Medieval Times is about because the woman didn't fight.
	22—Improving a theory	Student improves an already existing theory through elaborating, specifying details or using new evidence	My theory: I think women would not go fishing because they would be at home sewing and baking depending what part of the feudal system your in. The queen or some of the most important Nobles might do it as entertainment
	23—Supporting a theory with justifications	Student supports an already existing theory with justifications	I agree but I think the men were farmers or maybe blacksmiths.