

Knowledge Building For Historical Reasoning in Grade 4

Monica Resendes, Maria Chuy
 Institute for Knowledge Innovation and Technology,
 Ontario Institute for Studies in Education/University of Toronto,
 252 Bloor Street West, Toronto, ON, M5S 1V6, Canada.
 Email: monica.resendes@utoronto.ca, maria.chuy@utoronto.ca

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 attributes of historical reasoning: *contextualization*, *using substantive concepts*, *asking historical questions*, *using meta-concepts*, *using historical sources*, and *argumentation*. Results show student engagement with the first two attributes in particular, and pinpoint components of less developed attributes that require further pedagogical support.

Introduction

Theoretical explanations are central to historical inquiry. The ability to create coherent explanations, which demonstrate how well a particular theoretical proposition explains a set of established facts, becomes especially critical for addressing historical questions with no “right answer” (Thagard, 2006). Thus, the objective of this study was to explore what attributes of historical reasoning help to develop coherent explanations and under what conditions these attributes could be developed in students. Van Drie and Van Boxtel (2008) propose a framework for conducting empirical analysis of historical reasoning that includes six critical attributes: (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 (6) *using historical sources*—which involves interpretation, evaluation and comparison of primary and secondary sources. These aspects are fundamental to high-level historical reasoning and provide a basis for developing students’ capacities to produce coherent explanations.

So what are the pedagogical practices that would help to develop these six attributes of historical reasoning in students? In this study, we choose to focus on a Knowledge Building pedagogical approach (Scardamalia & Bereiter, 2003) to historical inquiry. This approach is defined as ‘*the production and continual improvement of ideas of value to a community*’ (Scardamalia & Bereiter, 2003: p. 1370). Knowledge Building is expected to be particularly conducive to the development of historical reasoning because it requires students to 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 space where students contribute ideas, questions, evidence, and so on, as multimedia notes into a collective knowledge space.

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: Does sustained engagement in Knowledge Building help young students develop sophisticated historical reasoning? What critical attributes of historical reasoning were fostered in the setting under investigation? Which attributes remain unaddressed or underdeveloped, and thus require additional support?

Methods

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 (KB) 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 KB 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.

Plan of Analysis

A total of 445 notes were generated in the database, distributed over 13 views. The most complex view, entitled “Medieval Times” and containing 92 notes, was chosen for data analysis. To guide the analysis, we created a coding scheme that included the attributes of historical reasoning as outlined by Van Drie and Van Boxtel (2008) and adapted it to our research study. More precisely, we examined whether each note falls into one or more of the following categories: (1) *asking historical questions*—category that included explanation-seeking, fact-seeking, or evaluative questions; (2) *contextualizing*—category that situated historical phenomena in a spatial, temporal or social context; (3) *arguing*—category where claims or theories were supported with arguments, or refuted with counter-arguments; (4) *using substantive concepts*—category that included unique, inclusive and colligatory concepts; (5) *using meta-concepts*—category that dealt with cause and consequence, change and continuity, historical significance, moral judgment, and historical perspective; and (6) *using historical sources*—category where new facts were introduced or described, references were sought or used to support or refute an idea, and sources were evaluated or compared. In addition to these six categories, already identified by Van Drie and Van Boxtel (2008), we added a seventh—*theorizing*. This category allowed us to detect how often students proposed theories to explain historical phenomena, how often they worked to improve these theories, or sought alternative theories. Two raters independently coded the notes with a result of 80% agreement. To resolve the 20% disparity, raters discussed the discrepancies and thereby attained full agreement.

Results

The analysis of KF notes produced in the Knowledge-Building classroom showed that historical *theorizing* was present in 18% of the notes. Close examination of these notes demonstrated that with help of Knowledge Building pedagogy, 9-10 year old students were not only able to develop their own theories to explain historical phenomenon, but also to perform substantial work on *theory improvement*.

So, what attributes of historical reasoning helped students to develop historical theories at this young age? Analysis indicated that the most apparent attributes of historical reasoning were *contextualizing* (which was present in 63% of student notes), and *use of substantive concepts* (present in 47% of student notes). Students repeatedly introduced familiar historical concepts into the collaborative dialogue in an explicit effort to advance their knowledge about these concepts and to construct meaningful historical contexts around them. For example, S1 writes, “*Was Shakespeare in Medieval Times? I think he was because he wore those goofy clothes.*” S2 builds onto this comment in an effort to improve his classmate’s ideas: “*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.*”

Other aspects of historical reasoning, such as *using historical sources*, *historical questions* and *using meta-concepts*, were detected in 28%, 27 % and 25% of the notes respectively. Sources were most often used to introduce or describe new facts, historical questions were extensively of an evaluative nature (e.g. “*why back then they painted so much?*”), and finally, meta-concepts referred mostly to historical continuity and change (e.g. “*How were the Elizabethan times different from medieval times?*”). These findings demonstrate that Knowledge Building pedagogy allows engagement with history in a much more exploratory manner than traditional texts, and encourages students to discuss historical events from different perspectives.

Less present, but still quite high for this age is the number of notes demonstrating *argumentation* (18% in total). This attribute is among the most difficult for students to master, as it requires sophisticated use of historical evidence. Future pedagogical intervention would involve additional work on the evaluation and comparison of historical sources, which represent important processes but were lacking in students discussions.

References

- 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., & Bereiter, C. (2003). Knowledge building. *Encyclopedia of education*, (2), 1370-1373.
- Thagard, P. (2006). *Hot thought: Mechanisms and applications of emotional cognition*. Cambridge: MIT Press.
- 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.
- Zhang, J., Scardamalia, M., Lamon, M., Messina, R., & Reeve, R. (2007). Socio-cognitive dynamics of knowledge building in the work of nine and ten year-olds. *Educational Technology Research and Development*, 55:2, 117– 145.