Ways of Contributing to a Knowledge-Building Dialogue in History

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Abstract: This study explores grade four students' ways of contributing to knowledge building in history. Quantitative and qualitative analyses cover three months of online dialogue in Knowledge Forum. Preliminary results indicate that students were actively "building contexts," "theorizing" and "using substantive concepts"; the more they theorized, the more they asked questions, provided contextual details, and engaged historical concepts. "Introducing new facts" facilitated idea improvement. Outcomes will inform the design of scaffolds to support high-level historical discourse.

Introduction

Given that new knowledge is advanced in large part through the discourse of knowledge creating communities, this study explores student ability to contribute to explanation-seeking dialogue in history. The concept of "explanatory coherence" (Thagard, 1989), serves as both an objective and a basis for evaluating the historical explanations students construct. Thus, the main objective of this study is to begin to explore how different ways of contributing to collaborative knowledge building discourse can help students improve their ability to exercise high-level historical reasoning through the creation of coherent historical explanations. This study explores Knowledge Building (Scardamalia & Bereiter, 2003) for historical inquiry, a pedagogical approach defined as "*the production and continual improvement of knowledge of value to a community*" (Scardamalia & Bereiter, 2003: p. 1370). The pedagogy is supported by Knowledge Forum (Scardamalia, 2004), a shared knowledge space in which students contribute ideas, questions, and so on, to multimedia *notes* positioned on graphical *views,* which serve as organizing backgrounds. Verbal *scaffolds* embedded in notes support specific discourse moves. For this work students used a scaffold that encouraged them to state and improve their theories.

Method

Participants and Dataset

Participants for this study included 21 Grade 4 students (9-10 years) attending a primary school in downtown Toronto, and their teacher. The class engaged in Knowledge Building three times a week for 45-60 minute periods that included "KB [Knowledge Building] talks" coupled with time on Knowledge Forum. The dataset is comprised of three months of online dialogue about medieval history totaling 545 notes across 13 views.

Plan of Analysis

General Distribution of Contributor Roles

In order to delineate contribution types, individual notes were coded according to a discourse schema with nine main categories and 30 subcategories. Six categories were adapted from Van Drie and Van Boxtel's (2008) framework for historical reasoning, including—I.) Asking historical questions (factual and explanatory) II.) Building historical contexts (social, spatial, temporal) III.) Using substantive concepts (inclusive, unique, colligatory) IV.) Using meta-concepts (historical significance, historical perspective, historical empathy, change and continuity, cause and consequence) V.) Argumentation (weighing claims, making counter-claims, accounting for counter-claims) VI.) Using historical sources (introducing a fact, using sources to support/reject an idea, seeking, comparing or evaluating sources). Because Knowledge Building focuses on collaborative theory building, we added three categories adopted from a coding schema the authors developed for a similar study in science (see Chuy, Resendes & Scardamalia, 2010). These include—I.) Theorizing (proposing, supporting, improving, seeking alternatives) II.) Synthesizing and comparing (synthesizing ideas, "rising-above', making comparisons) III.) Supporting discussion (giving opinions, mediating). The most complex view comprised 18% of the total notes and was analyzed independently by two raters with 80% agreement. The 20% disparity was resolved through discussion. The remaining 12 views were coded by the primary author.

Case Analyses of Theory Development

For case analyses, we selected contributions pertaining to "theorizing"—namely, "improving explanations"—to examine their role in theory development. All contributions were traced from notes that were components of "inquiry threads" (see, Zhang, Scardamalia, Lamon, Messina & Reeve, 2007) where the move from half-baked

theories to more coherent explanations was evident. Case analysis focused on two questions—I.) What is the nature of the knowledge advance? II.) Did certain contribution types help raise the level of discourse?

Preliminary Results

General Distribution: What Types of Contributions Are Evident in the Discourse?
Preliminary analysis shows that students engaged most frequently in "building contexts" (28.11%), "theorizing" (15.87%) and "using substantive concepts" (15.67%), showing that young students are interested in building historical contexts and proposing historical theories, and are capable of using a high number of substantive concepts to this end. Students also engaged in "asking historical questions" (11.15%) and "using historical sources" (11.56%), indicating that they are able to pose multiple questions and utilize authoritative sources in their theorizing work. The least frequent modes of contribution were "supporting discussion" (5.27%), engaging meta-concepts (8.13%), argumentation (2.39%) and "synthesizing and comparing" (1.85%). Further research is needed to determine whether boosting these less frequent modes would raise the level of historical reasoning.

Do Relationships Exist Between Students' Theorizing and Other Contribution Types?
A Spearman correlation analysis was conducted to examine whether there is a relationship between students' theorizing and other contribution types. Results suggest a positive relationship between "theorizing" and "asking historical questions" ($r = .58**$); "building historical contexts" ($r = .83***$); "using substantive concepts" ($r = .62**$); and "engaging meta-concepts" ($r = .65**$). Thus, it appears that the more questions students asked, and the more they worked to build historical contexts, the more theorizing students performed, including generating different theories, supporting or rejecting theories based on gathered information, and improving theories. Results also suggest that the more students theorized, the more they engaged "meta" and substantive concepts.

Case Analyses: What Role Do Contribution Types Play in Knowledge Advancement?
Case analysis of inquiry threads was conducted to complement quantitative findings. Improved explanations revealed a deeper understanding of *particular* historical contexts that relied upon constructive use of authoritative information. Students also engaged issues of historical causation in increasingly complex ways, such as moving from theories that explain historical action in terms of personal desires or "generalized stereotypes" to those that begin to employ "situational analysis" (see Lee and Ashby, 1997). In three cases, the "introduction of a new fact" embedded within a collective inquiry was the catalyst for idea improvement.

Can We Advance Historical Reasoning through Design Experimentation?
More research is needed to determine whether these results form the basis of more general discourse patterns and the extent to which they apply to all participants rather than conveying results on average, with substantial variation across participants. Current work aims to advance discursive moves such as "using historical sources" and "synthesizing knowledge." Since "using historical sources" is critical to high-level historical work and is important for students' theory improvement, new scaffolds will directly target this competency. Also, new scaffolds will be designed to make the value of meta-concepts more explicit. We aim to extend the repertoire of contribution types and demonstrate more consistent change to more advanced concepts by more students.

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