Mediating Collaboration in History with Network Analysis

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Abstract: This poster discusses a promising collaboration platform to encourage students in co-constructing historical knowledge through a network visualization tool. The tool uniquely mediated collaboration at both the small and large group level in a big lecture format undergraduate history class. The findings demonstrated the tool mediated a specific sequence of collaborating processes at both levels and students' ability to see the historical relationships.

Introduction

Novice history learners struggle to consume lengthy historical texts because they tend to see such texts as an established list of facts to memorize rather than as an interpretive argument supported by evidence (Wineburg, 1991). It is particularly challenging for them to grasp the connections between the many participants and events within the text. Given the length and scope of many historical texts, students can benefit from collaborating to divide the text into more digestible components, and then working together to construct an argument based on the entirety of the corpus. However, framing history as an interpretive account through collaborative effort is unusual in undergraduate history classrooms because the large lecture format that is common to many undergraduate survey classes makes it challenging to coordinate students' activities. In this poster, we suggest that network visualization tools can offer a promising collaboration platform to encourage co-construction of the connections within historical texts. The aim of this study is to provide a deeper understanding of how a network analysis tool called Net.Create (see Figure 1) might function to mediate students' collaboration at both the small group and whole class (i.e., large group) level as they explore the details of a history text through network creation and analysis.

Figure 1. Net.Create interface and students' constructed network.

Net.Create as a tool for supporting collaborative learning

From the lens of sociocultural theory, learning, thinking, and acting are mediated or transformed by tools and signs (Roth & Lee, 2007). The study of mediated action is concerned with both individual's active use of cultural tools and the mediator's influence on individual's use. Therefore, mediators both shape and are shaped by the individual (Danish, 2014). In this study, we positioned Net.Create as a mediating tool to scaffold student collaboration across the small and large group level and to provide a meaningful joint task that affords discussion. Net.Create is a network analysis tool that supports student entry of information about relationships among person, group, event, or place in historical texts into a database of connections that is then visualized live as each new entry is added. Network analysis can represent the connections within historical texts by collecting and visualizing data as a set of elements (nodes) and connections between the elements (edges), and the history students can build and use the aggregated information from each node and edge connections to interpret history. The specific features in the tool can scaffold the collaborating process by mediating students' conversation while students determine which historical piece can be recorded as a node and categorize it into person, group, event, or place. Next, the edge entry prompts scaffold students to look at the relationship between nodes, select the directionality of the edge, and provide a citation. As nodes or edges are recorded, they are instantly visualized in the whole class network. By using this tool, small groups of students engage with the historical significance for each detail while reading the part of the text and collaboratively co-construct the historical connections among many possible entries and can simultaneously see and reflect on the whole class network. The process of dividing a long historical source into smaller sections and offering those sections for small-group data entry is a good model for other networks outside of history where simultaneous or team-based network data entry is needed, focusing on network interactions.

Methods

This study used the Net.Create tool during two 50-minute class sessions in a classroom of 73 students taking a survey history course at a midwestern United States university. Students were divided into groups of 2-3 students. The classroom was a large lecture hall where seats were arranged in tiers. Each group had at least one shared laptop to collaboratively use the tool. A total of 8 groups voluntarily participated in the data collection including video, pre/posttest, and software log data. Each group was assigned to a different chapter from a text about Alexander the Great and asked to make entries with using the Net.Create tool. We selected Alexander the Great because it was the most complex, lengthy source in a course on ancient history taught by history instructor who had agreed to participate in the study. At the end of each class, students were asked to interpret Alexander's leadership style. To analyze the data, we employed discourse analysis (Potter, 2003) to discover a pattern of interaction in the classroom.

Findings

Our analysis showed that the Net.Create tool shaped students' particular collaborating sequence in working with the historical text. To begin the activity, students as a group first read the text and started to think and discuss about what would be a reasonable item to record as a node before entering nodes and edges (e.g., So, do *we* put either of that down (pointing the screen), should *we* put Ammon, should *we* put Homer). While entering them, the prompts in the tool to add nodes and edges led the students to engage the text in a more interpretive way and pushed them to look for connections. For example, when students were asked to categorize their entry by person, group, event, or place, they discussed about selecting the most reasonable argument as a group based on what they read (e.g., So I know *we* mentioned the dream in an event description, but should *we* make the dream into an event on its own?) Then, they seamlessly started to look for another node to connect through an edge (e.g., And then, you've gotta add an edge). These patterns of discourse prevailed across the data set. Also, the Net.Create tool uniquely mediated student collaboration in interpreting the historical text at both small and large group level. As soon as a small group of students entered nodes and edges in the tool, they were instantly able to observe how their group's entry was visually connected to the whole group network. This feature of the tool afforded students a way to visualize how they were contributing to the whole network and realize how each node was related in the bigger history context (e.g., Whoa! This is so cool! *We* should keep going! *We* need to contribute). Later in the class, the instructor was actively utilizing the co-constructed whole network for a whole class discussion (e.g., What do you guys see here? Which nodes aren't connected?)

Discussion and conclusion

These findings suggest that the Net.Create tool mediated how students collaborated at both the small and large group level to engage with a new-to-them historical monograph in a manner that helped them begin to situate ideas within the text. First, in order to create a network, students had to identify nodes and edges within the text, which led them to have productive conversations about the important people, places, and events in the text. Second, as students used Net.Create to connect nodes via edges, the tool mediated their ability to see the historical relationships and made it salient when nodes were connected to primary network or not. Third, the tool leveraged the larger community to support students in making sense of an entirely new text in a limited time. Lastly, the network served as a reference point for the whole class discussion, leveraging the work of small collaboration groups to support whole class connections. By dividing up a large, unfamiliar text into smaller pieces and assigning those to small collaborating groups whose work fed back into a whole-class network, the large lecture format that typically limits collaboration options became a positive feature of the activity. These results provide evidence that Net.Create demonstrated promise in supporting students in co-constructing historical knowledge.

References

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