Historical thinking skills and mastery of multiple document tasks

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ARTICLE INFO

ABSTRACT

We investigated whether historical thinking skills as measured with a standardized test are related to performance in a multiple document task. After 111 German 9th graders completed a standardized test of historical thinking skills, they worked through a computer-based learning environment that included eight documents while answering two open-ended questions regarding the attitudes reflected in the documents towards the introduction of the German Emergency Law. Historical thinking skills were associated with using more information from the documents and with identifying causes for the different attitudes towards introducing the law. Further, closed-ended items that were administered after the learning material was no longer available revealed that historical thinking skills were positively associated with extracting source-specific subtext and with verifying statements about the documents' contents. We conclude that historical thinking skills are related to the mastery of multiple document tasks and discuss implications for future research.

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1. Introduction

The past shapes the present and the future. Therefore, understanding and reasoning about the past is an important prerequisite for making historical sense of current political and societal conditions and developments (Körber, Schreiber, & Schöner, 2007; Mosborg, 2002; van Drie & van Boxtel, 2008). In particular, understanding past events requires knowledge of the methods that historians use to gather historical evidence (Baron, 2012). Historians agree that multiple documents need to be consulted in order to create the most reliable representation of past events based on the available sources (Rouet, Britt, Mason, & Perfetti, 1996; Rouet, Favart, Britt, & Perfetti, 1997; Wineburg, 1991). However, there is ample evidence that novices often do not use strategies that would be appropriate for handling multiple documents, both in the domain of history (Rouet et al., 1997; Wineburg, 1991) and in other domains (Bråten, Strømsø, & Salmerón, 2011; Kammerer & Gerjets, 2014; von der Mühlen, Richter, Schmid, Schmidt, & Berthold, 2016). Hence, there is a link between domain-specific skills and the processing of multiple documents within that domain.

To date, to the best of our knowledge, domain-specific skills have only been operationalized as prior topic knowledge as a proxy measure (Bråten et al., 2011; Gil, Bråten, Vidal-Abarca, & Strømsø, 2010) or as belonging to a group of assumed experts, not accounting for potential differences within these groups (Rouet et al., 1997; Wineburg, 1991). In contrast, we used a standardized test of historical thinking skills to gain further insights into the prerequisites of multiple document processing. We will first describe a domain-general theory of multiple document processing (Britt & Rouet, 2012) before briefly discussing prerequisites for the mastery of multiple document tasks. Historical thinking as a potential prerequisite for mastering multiple historical documents will then be defined in more detail (Körber et al., 2007; van Drie & van Boxtel, 2008; Wineburg, 1991).

1.1. Multiple document processing

This section focuses on the multiple documents literacy framework initially put forth by Perfetti, Rouet, and Britt (1999) and refined by Britt and Rouet (2012). This framework is applicable to various domains that rely on the use of multiple documents to gather evidence. Because history also relies on the use of multiple documents (Reisman, 2012; Rouet et al., 1996, 1997; Wineburg, 1991), the framework can also be applied to the domain of history; however, it does not offer any insights into the processes that are relevant for historical reasoning (see Section 1.3 for a domain-specific model of historical thinking skills). In the multiple document literacy framework, Britt and Rouet (2012) have proposed that readers of multiple documents create a document node and a situation model for each document. Whereas the document node includes information about the documents' sources, the situation model comprises a mental representation of the respective document's contents, also building on the readers' prior knowledge. Document nodes are represented in the intertext-model that includes links between different document nodes; the individual situation models are

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integrated into a common mental representation. Ultimately, the intertext-model and the common mental representation constitute the documents model. In the documents model, new information is integrated with reference to the learners' prior knowledge.

During the creation of a comprehensive documents model, skilled readers use strategies that were initially described in the seminal work of Samuel Wineburg (1991): *sourcing*, *corroboration*, and *contextualization*. *Sourcing* refers to the act of attending to source information when interpreting the documents' contents. In this process, competent learners attend both to the authors' credentials as well as to the style of the document (i.e., subtext) that may be used to induce biased interpretations (Britt & Aglinskas, 2002). In the context of the multiple document literacy framework, sourcing is considered essential both for the creation of the document nodes including information about the sources as well as for establishing source-content links (Britt & Rouet, 2012). *Corroboration* refers to the act of comparing information from different sources. In this process, learners check whether information is backed by multiple sources or whether there exists contradictory information. Consequently, *corroboration* is relevant for the creation of the intertext-model (i.e., source-source-links) as well as for the integration of information from different documents in one common mental representation (Britt & Rouet, 2012). Finally, *contextualization* refers to creating (*historical*) context in order to integrate the information that is presented in the documents. In this process, learners use general world knowledge, topic knowledge, and domain-specific skills (i.e. knowledge of expert procedures) to check information for its plausibility (van Drie & van Boxtel, 2008; van Boxtel & van Drie, 2012; Wineburg, 1991). *Contextualization* is conceptually related to the process of integration that refers to use of prior knowledge and expert strategies in order to understand the documents' contents (Britt & Rouet, 2012).

1.2. Preconditions for the mastery of multiple document tasks

In Section 1.1, we described a theoretical framework for the processing of multiple documents. This section is concerned with empirical work investigating the prerequisites for mastering multiple document tasks. We will first discuss *sourcing* and *corroboration* as strategies that might be relevant across domains before we come to domain-specific aspects of multiple document processing.

Several studies covering multiple documents tasks regarding historical (Rouet et al., 1996; Wineburg, 1991), medical (Bråten, Ferguson, Strømsø, & Anmarkrud, 2014; Stadtler, Scharrer, Skodzik, & Bromme, 2014), psychological (von der Mühlen et al., 2016), or environmental issues (Salmerón, Gil, Bråten, & Strømsø, 2010; Strømsø, Bråten, & Britt, 2010) provide evidence for the importance of *sourcing* and *corroboration* in multiple document processing. For example, Strømsø et al. (2010) observed that source memory was positively related to inferences within and between multiple documents. Also, there is a link between accurate source evaluations and performance in multiple document tasks (von der Mühlen et al., 2016; Wiley et al., 2009).

In the domain of history, training and supporting the use of *sourcing* and *corroboration* in a computer-based learning environment increased the use of these strategies and resulted in better grades for the essays that the participants wrote based on multiple documents (Britt & Aglinskas, 2002). Furthermore, the essays of participants receiving instructional support regarding these strategies included more causal connectors (Britt & Aglinskas, 2002). In turn, Wolfe and Goldman (2005) demonstrated that self-generating causal connections among the information from different documents is associated with the comprehension of a historical event. In addition, prompts that guided the learners to use *sourcing* or *corroboration* resulted in them considering more different perspectives on a topic than a prompt focusing them to take the role of a historical agent, implying that *sourcing* and *corroboration* are associated with perspective taking (Monte-Sano & De La Paz, 2012). Given that the positive association of *sourcing* and *corroboration*

with performance in a multiple document task was observed across various scientific domains, these strategies can be considered domain-general (also see von der Mühlen et al., 2016) and are not limited to the domain of history.

However, even though *sourcing* and *corroboration* are important prerequisites for reasoning with multiple documents, showing behavioral indicators for applying these strategies to the learning materials (e.g. attending to source information) does not guarantee mastery of a multiple document task. For example, prompting participants to attend to source information and requiring them to monitor their comprehension process with regard to what they already know about a topic resulted in more attention to source information and a better recall of factual knowledge, but did not improve comprehension (Stadtler & Bromme, 2008). Hence, there seem to be other prerequisites for the mastery of multiple document tasks beyond showing behaviors related to *sourcing* and *corroboration*.

Across domains, there exists ample evidence relating domain-specific knowledge to performance in multiple document tasks. More knowledgeable learners frequently use strategies related to successfully integrating information from multiple documents into a coherent mental representation (Rouet et al., 1997; Wineburg, 1991), whereas students that are novices in the domain hardly use source information (Kammerer & Gerjets, 2014; von der Mühlen et al., 2016) and hardly contextualize information (Nokes, Dole, & Hacker, 2007; Wineburg, 1991). Accordingly, Bråten and colleagues (Bråten & Strømsø, 2010; Strømsø et al., 2010) found a positive relationship of prior topic knowledge and inferences generated within and between multiple documents. Furthermore, it has been shown that high prior knowledge students showed more signs of integrating information from multiple sources into an argumentation task than low prior knowledge students (Gil et al., 2010).

However, even if no topic-specific prior knowledge was available, domain experts used strategies that enabled them to better understand the information presented in multiple documents (Rouet et al., 1997; Wineburg, 1991, 1998). For example, graduate students in the domain of history wrote more balanced essays and created more historical context for a controversy than graduate students in other domains even though the two groups did not differ with regard to prior knowledge about the specific controversy (Rouet et al., 1997). In short, experts in the domain of history were better able to contextualize the information.

We assume that contextualization relies more strongly on domain-specific skills than the strategies *sourcing* and *corroboration*. In particular, even when corroborating information is found across several documents and the learner attends to the source information, it is still necessary to put this information into an appropriate (historical) context (Körber et al., 2007; van Drie & van Boxtel, 2008; van Boxtel & van Drie, 2012; Wineburg, 1991). In line with this argumentation, research has shown that it is easier to support *sourcing* and *corroboration* than to support *contextualization*. Whereas short-term interventions successfully supported *sourcing* and *corroboration* (Britt & Aglinskas, 2002, Stadtler & Bromme, 2008; however, see Reisman, 2012 for a lack of support of *corroboration* in a long-term intervention), short- and long-term interventions did not result in more *contextualization* (Nokes et al., 2007; Reisman, 2012).

To sum up, even though behavioral indicators such as attending to source information or comparing information from different documents may hint at appropriate processing of multiple documents, they do not necessarily reflect historical thinking skills on a more sophisticated level (i.e., *contextualization*, Reisman, 2012, Wineburg, 1991). Thus, domain-specific skills (i.e. historical thinking skills) are a relevant predictor for the mastery of multiple document tasks requiring appropriate contextualization of the presented information. Consequently, a measure of historical thinking skills should explain performance in a multiple document task beyond the influence of superficial behavioral indicators for the strategies *sourcing* and *corroboration*. However, to the best of our knowledge, indicators for domain-specific skills to date were only