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Teaching and learning the mindset of the digital historian and more: Scaffolding students' critical skills in the digital humanities

Katherine Hayles (2012, p. 21) notes how "[y]oung people practice hyper reading extensively when they read on the web, but they frequently do not use it in rigorous and disciplined ways." This is an important observation but what does this mean in practice? What does it mean to read in "rigorous and disciplined ways", online and offline, and how can we support students habits of mind when they read and interpret sources and information from and about the past? In this paper I will present some empirical studies to highlight challenges and opportunities to support students' success in navigating in the digital world of humanities.

Going to the sources and making sense of fragments from the past in archives, digital and analogue, demand historians to become experts in sourcing, corroborating and contextualizing the sources–and more. To better understand how experts and novices read historical documents we designed an eye-tracking study to track read differences between historians and students when they read historical documents from the time of the French revolution (Mulvey & Nygren, work in progress). We tracked eye movements of four historians, four university students, and eight high school students reading with an infrared non-intrusive eye-tracking camera. The stimuli contained four historical sources with information regarding human rights at the time of the French revolution. Sources were selected based upon their usefulness to test historical thinking (Wineburg, 1991); this means that they should be primary sources with important source information and hold valuable information for answering a complex historical question–challenging the reader to source, corroborate and contextualize the information.

The material participants in this study read included excerpts from four primary sources namely, (1) *Declaration of the Rights of Man and Citizen,* 26 August 1789, Paris, France; (2) *The Declaration of the Rights of Woman* by Marie Gouze [published under the pseudonym Olympe de Gouges], September 1791, Paris, France; (3) *A particular account of the insurrection of the Negroes of St. Domingo*, 1791, Paris, France; and (4) *Haitian Declaration of Independence*, January 1804, Gonaives, Haiti. In total there were 10 pages, 1828 words, for participants to read.

The preliminary findings show that historians seem to focus more on sourcing and central historical aspects of documents, whereas high school students focus more on dramatic events and racist language. Guided by a central historical question in a directed reading, these patterns change, especially for university students, but also for high school students, who now read documents more in line with historians' initial reading strategies. Our findings shed new light on how experts' and novices' historical literacy differs, and how these differences may relate to their abilities to critically scrutinize sources, corroborate evidence, and understand central aspects of historical events. Participants' scores in the post-tests correlates to some extent with participants reading focus, indicating how a more professional focus may be scaffolded by a historical question in ways that can help students pay more attention to source information.

However, digital historians do not only closely scrutinize documents, they also use archives with large sets of data. In my talk I will also present some indications from quasi-experimental studies showing that novice users of Swedish digital archives may lose their awareness of their theoretical position and empathy when using large data sets (Nygren 2014). When facing a large set of data and statistics it may be an instinctive reaction to start sorting the information and quantifying, rather than reflecting on the starting point of your research and critical perspectives, thus conducting a more interpretive investigation. Close reading of a few documents may perhaps make it easier to hermeneutically scrutinize the information. However, using digital tools and material can also be used to closely analyze how smaller fragments fit into a bigger picture, but this takes a critical awareness of the materiality and a focus on the research question, which both students and researchers need to bear in mind when "going" to the archives.

Evidently it is possible for students to navigate digital databases and learn history in new ways using affordable technological resources. But this needs to be supported by hard and soft scaffolding (Brush & Saye, 2002). Hard scaffolds built into the databases can make databases more useful for other than just historians with expertise of the digital architecture. Soft scaffolds designed by teachers and historians can make it possible for students to use Swedish digital databases designed for professional historians (Nygren & Vikström, 2013; Nygren, Sandberg & Vikström, 2014). In previous studies we find that students can learn to walk in the shoes of the digital historian and use primary digitized sources in constructive ways, but they often stumble when it comes to contextualizing the information. A central aspect here is the challenge of historical empathy. Understanding people in the past by their own standards means that we need to contextualize the information and try to shift perspectives. There is a challenge to understand the past as a "foreign country," a place where language and concepts as well as context differ in fundamental ways from our contemporary world (Lowenthal, 1985). This cognitive and emotional ability to understand unfamiliar perspectives across time and space, often labeled historical empathy, is a central but also complicated matter in historical studies (Davis et al 2001). Closeness and distance is vital in our understanding of the past and digital tools may help us see things in a larger perspective and also zoom in on selected parts in time and space. Closeness to primary sources and the environments studied may be a way to overcome temporal

and spatial gaps of understanding. Materiality may certainly affect our construction of knowledge (Latour 1999) and researchers and students in digital history may benefit from physical reminders of the complexity of the fragmentary remains behind neat data. Mixing the digital with tangible materials may be an important scaffold to consider.

Digital tools can also be used to complement printed material, in ways that may help students and historians overcome the unreachability of the past so evident when going to the archives (Robinson 2010). Using visualizations makes it possible to organize the information in new ways, for instance linking it to geographical locations and on temporal scales. Digital tools can be used to collect different types of data and to explore relationships in time and space beyond what may be possible in more traditional explorations using pen and paper (Nygren, Frank, Bauch & Steiner, 2016). In digital history the writing of history may be more than creating text. With digital platforms, readers/users can create and present multiple interlinked narratives; integrate images, maps, commentary, and primary sources in the same field of vision; and curate and shape the reader/user's experience, allowing for a hybrid experience (cf Thomas III & Ayers 2003). But as a final presentation, visualizations need to help the reader/user see behind the seductive cleanliness of data presentations and animations. It is also important to bear in mind how multiple narratives and multimodal presentations may confuse the reader/user rather than give a richer understanding of the topic. There may be a risk of cognitive overload for readers in hypertext environments (cf Gerjets & Sheiter 2003). All users need to learn to become critical readers and navigators in multimodal environments, and digital historians and students need to understand the audience in somewhat new ways when a digital tool becomes a publishing tool (Hayles, 2012). Students and historians need also be able to review scholarship in new media, if we want to make use of new opportunities and safeguard quality in historical scholarship and prepare students for a future in academia and beyond (Presner 2010; Nygren, Foka & Buckland 2014).

Last but not least we need to consider the uses of history in contemporary digital media. In an ongoing non-intrusive study of teachers contrasting contemporary uses of history with primary sources from the era of civil rights movement, we observe that students rarely critically scrutinize contemporary uses of the ideas of Martin Luther King Jr. when misinterpretations are underlined in the media (Nygren & Johnsrud, in review). For students, critically examining evidence seems to be difficult when authorities and media augment oversimplified and popular perceptions of the past. However, we also find that students can learn a more nuanced perspective on the life and deeds of MLK, findings still observable a year after the initial teaching took place. The results from this study show important potentials and limitations when trying to stimulate the learning of core content, critical thinking and values of social justice using primary historical sources and contemporary media representations that attempt to make the past historical and practical. Connecting the past to the present and critically scrutinizing contemporary media is asking more from students than what we ask from historians. And historians actually do not seem to be very good at critically scrutinizing online information

(Wineburg & McGrew, 2016). We need to better understand this challenge and how to deal with this in schools and academia in a digital age.

Scaffolding students to read and write with the affordances offered by the digital humanities is a certainly a tall order for teachers. To make this challenge a bit less complex I suggest a focus on a few central mindsets, namely, skills to *criticize, empathize* and *create*. Having the skill to *criticize* means that students, and scholars, in the digital humanities need to be able to: critically examine and corroborate various types of sources (such as text, image, and audio), critically read between the lines, read close and distant, critically explore and experiment with various digital tools, understand different critical and ethical perspectives, and formulate critical questions. This critical mindset is a central part of being a rigorous reader in the digital humanities. A skillful reader is also able to *empathize* with multiple perspectives. This central aspect of the humanities involves classic challenges to understand: historiography, different human perspectives, not least the mind of the author, the reader, the creator and ordinary people in foreign cultures and countries. Today this means not least understanding human existence and making in analog and digital worlds. This means that students must learn to contextualize the information and empathize in cognitive and emotional ways with distant worldviews. Last but not least students in digital humanities need to *create* accounts to process and communicate their thoughts in nuanced ways. Writing is still a central skill. But in the digital humanities there are now opportunities to think, make, enact and experiment in a diversity of forms and in collaborations. Some ideas might certainly benefit from being treated and presented in non-textual ways. But how do we stimulate all this in practice? The answer today is that we do not really know, and we need more empirical studies to connect our theoretical understanding to the learning of students.

It is time to move beyond anecdotal evidence about how to support learning in the digital humanities. The research presented here provides some small insights into the potentials and pitfalls of teaching and learning critical mindsets useful in the digital humanities. This research highlights how it is possible for, at least some, students to learn to read like historians, navigate digital archives and deconstruct contemporary media myths about the past. But our research also highlights the complexity of teaching and learning in the digital humanities, how little we know, and how important it is to support students' humanistic habits of mind.

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