

Recasting the History Textbook as an e-Book: The Collaborative Creation of Student-Authored Interactive Texts

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IN MILLIONS OF HOUSEHOLDS across the world, many teenagers will come home from school to enthusiastically design content to post on their social media sites. Yet many of them will only open their history textbooks to complete their coursework with great reluctance. For the past few decades, discussions of student-centered pedagogy and technology in the classroom have often dominated educational discourse; however, the daily grind of teaching in an era of high-stakes testing leaves many technological developments underutilized in classroom instruction. Thus, a pivotal question remains: How might recent advances in digital technology be coupled with student-centered pedagogy to elicit greater engagement in history classes? In our study, we explore ways to engage students in constructing historical narratives that represent multiple perspectives through the use of digitized primary source documents and content-authoring software. Our year-long exploratory effort culminates in a nine-day school intervention in which ninety-six students from a Northern California public high school author their own interactive digital history textbooks using primary sources from local and national archives.

While the classroom use of primary sources and digital technology alone is not a novel approach to history instruction, we argue that synthesizing primary sources with content-authoring software (specifically, e-book authoring tools) creates new potential for learning history in contemporary classrooms. In the words of Terry Haydn, we are not “techno-fundamentalists” arguing for the imperative use of technology in the classroom, nor are we suggesting that the greater use of digital tools in history classes will automatically lead to better learning outcomes.¹ Rather, we posit that to disregard the possible benefits of technology would be a “disservice” and “limit the ways in which [students] learn and benefit from a historical education.”² In line with the initiative by then-U.S. Education Secretary Duncan to place digital textbooks in every U.S. classroom by 2017,³ now is a pivotal time for researchers in history, social studies, and education technology to explore this new potential for learning history.

Theoretical Frameworks

With technology, teachers and students can often feel overwhelmed by the “digital deluge” of information,⁴ and the “fetishism” of both technology and artifacts can distract from learning.⁵ One way to help students and their teachers derive value from this great flow of information, and to employ digital tools in a meaningful way, is to combine digital content with “pedagogical content knowledge” (PCK).⁶ PCK concerns the study of how teachers can combine their content knowledge with effective teaching strategies. Our study adds a technological component—Technological Pedagogical Content Knowledge (TPCK)⁷—as a way to help teachers manage and make sense of information used in conjunction with technology, and to use technology to encourage student engagement.⁸ For our research, we define engagement in affective rather than intellectual terms (e.g., as one student said, “I thought we were going to have to write down things from an actual textbook but...got to create it on our own...it was really cool”).⁹ For history teachers, TPCK encourages the use of technology as a tool for students to discover and examine content sources largely independently of the teacher, although teachers can also use TPCK for initial scaffolding support in navigating the online arena. In the particular case of e-books, relevant TPCK can

include knowledge about hardware, software, media, and content management tools. To successfully integrate technology into the history classroom, teachers must be able to evaluate how particular digital tools can help history instruction, a task that proves difficult given the ever-shifting landscape of classroom technology and digital resources.

Another lens for examining technology in classroom learning is what scholars refer to as the “affordances” of technology. Donald Norman describes the affordance of an object as the aspect of a design that gives users clues about how it is used:

Slots are for inserting things into. Balls are for throwing or bouncing. When affordances are taken advantage of, the user knows what to do just by looking: no picture, label, or instruction needed.¹⁰

The traditional textbook as a classroom technology can be understood in terms of its limited affordances. Textbooks are to be opened and read. Digital textbooks, by comparison, have a wider range of affordances, depending on construction and platform of delivery. In the most advanced versions of this technology, multimodal content such as image galleries, 3D models, and scrolling sidebars allow for tactile interest-driven interaction with content. Generally, the affordances of most existing digital textbooks have been concerned with students as content consumers, but our study is guided by research that suggests students, when given the choice, prefer to produce media rather than just consume it.¹¹

Recent advances in hardware and software have made student-authored digital textbooks more feasible. For instance, a growing number of open educational resources (OER)—freely accessible and openly licensed educational media and tools—are now available as content and models for student-produced digital textbooks. While some templates provided in textbook-authoring software are limited in style and genre and, in many ways, still encourage the already existing trope of traditional textbooks, our project encourages students to explore how these templates can be combined to present historical content in a more innovative manner.

Nonetheless, although many students are voracious consumers and creators of digital media and content, they often analyze historical sources inadequately.¹² They may fall prey to “Encarta syndrome,” in which they cut and paste content from digital sources without

thinking.¹³ Or they may passively default to the primary sources their teacher and textbook present.¹⁴ Yet the ability to understand and reconcile differing viewpoints, as well as critically assess the potential value of digital sources, is essential for navigating today's complex information environment, where traditional distinctions between news articles and editorials are no longer as readily apparent as they were in the print era.

To help address these pedagogical shortcomings inherent in using both traditional history textbooks and primary sources, we adopt what some educators refer to as “historical reading and thinking.”¹⁵ Historical thinking is an approach to learning and understanding the past through a set of skills, including analyzing multiple perspectives through primary sources. Instruction in historical thinking helps students contextualize historical material and evaluate its value for different interpretive purposes.¹⁶ Some further argue for the need to engage both the minds and emotions of students with historical artifacts to improve their understanding of the complexity of history.¹⁷

Despite the importance of using primary sources in history classes, however, some have discussed at length the obstacles encountered in their classroom usage.¹⁸ For example, Denis Shemilt finds the superficial distortion inherent in tying historical thinking to standardized examination requirements highly problematic for assessing historical thinking; he argues that students sometimes receive “limited and highly selective background information” for test questions, making it difficult for them to appreciate the wider context of sources.¹⁹ Keith Barton further cautions that the rigorous discipline of a historian does not always translate well to fostering student interest, and at times these goals may actually be in conflict.²⁰

Christine Counsell raises a series of additional objections. First, she argues that it is difficult to translate the work of historians into a classroom setting because there are many improperly trained teachers—many of whom “received the new ideas third hand.”²¹ She also argues that many students erroneously view the term “reliable” in a binary fashion when they conclude that some sources are either universally reliable or not, rather than seeing sources as being reliable for a particular purpose in a particular context.²² Counsell further suggests that some of the terminology (e.g., primary sources, bias) and rigorous methods were “confusing or alienating” for lower

achieving students.²³ This could serve to not only make history classes more difficult, but perhaps boring as well.²⁴

One particularly illuminating example of how a poorly managed online research assignment can go terribly awry took place in Rialto, California in 2014. Tasked with finding primary sources online to consider the inquiry “Was the Holocaust a Hoax?”, at least 50 of the 2,000 participating students concluded that the Holocaust did not occur.²⁵ Part of the problem stemmed from students citing primary and secondary sources uncritically and failing to evaluate the value of these sources adequately. This example demonstrates the continued importance of recognizing the potentially large pitfalls that can manifest when teachers lack the TPCK to help mediate students’ online research.

While it is impossible to eliminate all of the aforementioned difficulties, our study works to mitigate these problems in several ways. Unlike many educational systems in Western Europe, history curriculum in the United States is quite decentralized. While each U.S. state has general social studies content and skills standards, teachers in many states have considerable discretion to teach core content in a manner and pace of their choosing. Additionally, historical thinking skills are seldom assessed by mandatory state examinations, which reduces the likelihood that teachers might inadequately teach historical thinking skills in a superficial manner if they are chiefly motivated to “teach to the test.” Furthermore, unlike truncated primary source excerpts that might be used in print examinations, students in a classroom setting have the potential to investigate the historical background of a source more thoroughly with access to the Internet.

Whereas some previous researchers directed criticism of the historical thinking approach at teachers who instructed students to pursue particular questions and/or sources, our study empowers students to choose their own primary sources, topics of interest, and narrative structures that they find interesting and relevant, as historians would themselves. Additionally, our study utilizes e-book publishing tools that were unavailable to previous generations of students; we argue that these tools have easy-to-use formats for students to access digitized primary sources and incorporate them into their historical narratives (these affordances will be discussed in depth in a later section). And while historians do more than just

select, analyze, and contextualize sources, our project helps students begin to develop these incipient skills as critical consumers—and creators—of digital information rather than be passive learners working only with materials chosen by their teachers. Furthermore, with the use of the familiar medium of digital technology, students can transfer their learning from traditional historical artifacts to the variety of sources they will encounter online throughout their lives. For instance, the ability to include music and videos in their electronic historical narratives enables them to communicate a greater context of such sources than with print sources alone.

History teachers who limit or do not use technology may be “missing out” on opportunities to make history more vivid and enticing.²⁶ Yet we acknowledge that these very digital tools, including online archives, can create more challenges for teachers.²⁷ While technology and the Internet are not essential tools for “doing history,” they are nonetheless the tools that today’s students are likely to reach for first.²⁸ Putting students into the role of content creator with digitized primary sources encourages them to begin work toward mastering these resources and addressing—with the assistance of their teachers—the plethora of new challenges they present.

While primary sources can certainly be accessed without the use of technology, digital tools provide a much greater depth and variety of accessible sources that would not otherwise be available, as outlined in **Figure 1**. That said, the availability of technology need not mean the advantages of print sources would be discounted. For instance, original primary sources (from archives or elsewhere) can provide the tactile experience that cannot be replicated in a digital setting. Therefore, both print and digital sources—as with the project presented here—can be used together. Given their respective advantages and disadvantages, such a combination of source type would, in fact, be ideal.

Methods

We used a design-based methodology for our study,²⁹ which is an approach for studying learning in settings using the systematic design and study of instructional strategies and tools.³⁰ We focused on three key characteristics of design-based research: 1) development and research that occur through iterative cycles of design, practice and

Project goals	Print only	Online only
Primary sources	Advantage of tactile experience, such as “smell/ touch” (if original sources are present)	Allows a greater variety of tools (maps, interactive images, call-outs, translation tools, magnification, video, music, etc.) and students are not limited to teacher-selected sources; online media literacy skills cultivated—transfer to application outside the classroom
Multiple perspectives	Often limited to primary sources available at or through school—low-resource schools at disadvantage	More variety in primary sources, not limited to teacher-selected sources; however, limited to schools with access to computers and reliable Internet access
Source contextualization	Limited to primary sources available at or through school—low-resource schools at disadvantage	Not limited to teacher-selected context and students can easily seek out additional sources, though there can be a higher potential for problematic sources (e.g., Rialto project)
Close reading	Limited to language fluency of student	Translation tools, albeit of variable quality, available online to use sources in languages besides the language of instruction
Corroboration	Potentially less time consuming (no need to learn technology)	Peer co-editing remotely (outside class), easier to share across schools (and community) and across time

Figure 1: *Affordances of Print and Online Pedagogical Mediums*

implementation, analysis, and redesign;³¹ 2) research on emerging designs that leads to sharable theories that can be put into practice; and 3) research that considers how designs function in actual classroom environments.³²

Building from these characteristics, we implemented an exploratory in-class intervention to test the feasibility of incorporating digitized primary sources, content-authoring software (specifically e-books), and touch-based devices into a world history curriculum. We relied on a constructivist research approach in which learners develop their own understanding through open-ended interaction with a variety of resources and a blend of experimentation, experience, peer collaboration, and guidance from their teachers, our research team, and archivists.³³ We designed the intervention around the following question: How might co-production of digital textbooks encourage students to incorporate multiple perspectives with primary sources in new ways that are not possible using traditional print-based methods alone?

The core research team comprised three former primary and secondary teachers (two trained in the Learning Sciences and one in Social Studies Education) and an individual with experience as a student-publication advisor. Together, they worked with a collaborating history teacher who had been previously trained in the use of historical thinking in the classroom and had been incorporating strategies necessary for primary source use in the classroom throughout the school year. The teacher considered himself driven to adopt new curricular strategies that could help counter the lack of motivation that he sometimes observed in his classroom, particularly among his academically struggling students. Admittedly, the cooperation of such a motivated and effective teacher is likely an essential component for such a project's success. As Karen Riley notes, "no curriculum guide can replace solid teacher knowledge of the subject and responsible curriculum decision making in terms of purpose, appropriate strategy, and quality of student activities."³⁴

The study's participants, San Francisco Bay Area students, used primary source material from the Hoover Institution Archives, U.S. National Archives and Records Administration in San Bruno, California, and various online archives from around the world organized according to the History Social Science Content Standards

for California public schools. The project also offered students a unique collection of dozens of international textbook excerpts that a member of our research team obtained primarily from the George Eckert Institut for Textbook Research in Germany. Building on previous research efforts in cross-national textbook studies,³⁵ the content obtained from these older and foreign textbooks—a mix of print and digitized resources—offered views into the textbook narratives of dozens of other countries during the past century. By incorporating these excerpts, students were able to challenge the singular, cohesive narrative of traditional textbooks in their digital learning, sharing how the same historical events are discussed from a variety of international perspectives. Lastly, we also relied on educational content and expertise from the Stanford History Education Group (SHEG), which is part of the U.S. Library of Congress’s Teaching with Primary Sources Educational Consortium.³⁶

Archivist Collaboration

Local archivists provided guidance about how to more effectively use their digitized artifacts, as well as information regarding the copyright and public use of primary sources. They discussed their experiences working with students using archival materials and highlighted particular artifacts, including propaganda posters and diaries, that they found generally appealed to students. Additionally, a professional archivist from Hoover worked directly with students throughout one ninety-minute class session prior to our formal curricular intervention. The archivist first guided students in a show-and-tell of archival material, then discussed how primary sources can be used to explore multiple perspectives of historical events.

Digital Library

Prior to the intervention, our research team created a curated digital library for the project as a way to make the web’s potential for digitized primary sources manageable for students. Based on teacher feedback and established student work practices, we relied on Google Docs as a mechanism for organizing the library. With 300-plus links to source material organized according to the History

Social Science Content Standards for California public schools, our digital library highlighted top-tier resources for digitized artifacts from across the Internet, including the Cambridge Digital Library, the Hoover Archives, the National Library of the Netherlands and the Museum Meermanno-Westreenianum in The Hague, the U.K.'s National Archives, and the U.S. National Archives. Thus, in short, we provided a wide range of curated sources at the outset of the project, but allowed students free reign to choose from among these vast databases of sources.

Setting

The setting was the collaborating teacher's four tenth grade world history classes in a public (charter) school. Approximately twenty-five students with broad academic performance comprised each class; in total, ninety-six students participated in the project. The school's student minority enrollment totaled 65%, and 36% were classified as economically disadvantaged. The school is situated in a region known for low percentages of college readiness for Latino, African-American, and Pacific Islander students, as well as low-income students and English language learners. Through a convenience sample, we selected this site given its record of collaborating with education researchers.

Data Sources

After a month of classroom observations, we developed a curriculum module comprised of mini-lessons that were implemented during the last month of the school year. Our module took place during nine consecutive days comprised of thirty- to ninety-minute class sessions, prior to which the teacher spent several weeks working with students to choose primary sources suitable for their chapters. Data collection instruments and technologies included interview guides, student questionnaires, videotaping, and transfer tasks. Each mini-lesson occurred at the start of a class period. Working in groups, students co-constructed chapters for inclusion in a digital history textbook for their class as well as a resource for other teachers. Additionally, two researchers coded content from the student-authored textbooks.

Results

The results of this study fall into two categories, as discussed below: a curriculum intervention, which can be used as a model for implementation elsewhere, and student digital textbooks, which allow a consideration of the potential value, including student engagement, gained through such a curriculum intervention.

Curriculum

One of the key outcomes of our study is the creation of a curriculum for modeling the use of e-book authoring tools in a history classroom:

Orientation to iBooks Author. This mini-lesson focused on educating students about the fundamentals of working with iBooks Author and Macintosh computers. This included topics such as opening the program, saving a new file, and adding text and digital resources. After a brief class discussion, students began working with the software (see **Figure 2** for a screenshot of a student project open in iBooks Author).

Templates and exemplars. The research team worked with students to explore iBooks Author templates designed specifically for this project. Students also viewed several examples of an existing digital textbook, such as *Freedom Now: The Civil Rights Movement in Mississippi*,³⁷ on iPads for inspiration and clarity in how a digital book might be designed to move beyond the flat, static pages of a printed textbook. Finally, students viewed exemplars created by the research team as models of multiple perspective taking in an interactive digital format. Each of two exemplars used the prepared templates to introduce a topic the students were familiar with and presented the event from a variety of historical perspectives.

Our research team emphasized that multiple perspectives need not always require multiple sources, as they can sometimes also exist within a single primary source. Using a well-known iconic photo of Roosevelt, Churchill, and Stalin from the Yalta Conference, we conducted a scaffolding exercise where we encouraged students to discuss the varied perspectives they could identify in this photo.



Figure 2: Screenshot from a student-authored interactive text, "Day of the Black Sea," in iBooks Author.

Students were able to point out that different facial expressions and body language can perhaps illuminate differing attitudes about what was happening at the conference. We then elaborated on the idea of multiple perspectives further by sharing other photos of this trio taken during the same time, in order to illustrate the limits of relying on any one source for drawing historical conclusions.

Widget station rotation. As part of this hands-on session, students moved through six workstations housed at desks within the classroom. At each station, the research team and collaborating teacher orchestrated “playtime” and experimentation for students by showcasing widgets (applications that perform small functions) and tools relevant to digital book making. In particular, students could experiment with the following widgets:

- *Interactive images:* Callouts and pan-and-zoom features are overlaid on photos, images, drawings, and scanned documents.
- *Interactive galleries:* Collections of photos, images, drawings, and scanned documents are viewed with a “swipe” of a finger on an iPad. Thumbnails of the images aid in navigation and presentation.
- *Scrolling sidebars:* Historical documents, transcripts, and textual analysis are presented in “boxes” of text that could extend indefinitely.
- *Pop-overs:* A swipe of a finger or a click of a mouse could trigger the emergence of a window with additional information, images, or other data to give more context.
- *Media video and audio:* Movies and audio files are embedded in pages to play either automatically or on demand.
- *3D images:* Readers interact with three-dimensional objects by touch (i.e., rotation).

Graphic design considerations. This lesson highlighted the basics of good design, from readability and color selection to the use of fonts and space. Students were asked to consider such interactive design questions as:

- What interactive features might be used to draw the reader’s attention to multiple perspectives?
- How might an interactive feature move from a superficial “bell-and-whistle” feature to a meaningful storytelling device?

Chapter 10.5.5

The Violations of Human Rights and Genocide of the Armenian Citizens



The Turks wanted the Armenians out of their country but didn't know how to get them out, but once World War I began they were able to figure out a way to get rid of them. First it was dehumanizing and slowly it became genocide.

During World War I poison gas was used against the soldiers letting them die in a very painful way.

COMPARING PERSPECTIVES WITH INTERACTIVE IMAGES

New York Times article about the Armenians

August 6, 1915

ARMENIAN HORRORS GROW, says the London Paper. The Armenians are being massacred in the mountains of Armenia. The Turkish army is advancing on the coast. The Armenians are being driven out of their homes and are being killed in the mountains. The Turkish army is advancing on the coast. The Armenians are being driven out of their homes and are being killed in the mountains.

August 16, 1915

ARMENIANS ARE SENT TO PERISH IN DESERT

Turks Accused of Plan to exterminate White Population—Population of Karabagh Massacred.

Special Obit. to THE NEW YORK TIMES, Daily News, Wednesday, Aug. 16.—The Armenians are being driven out of their homes and are being killed in the mountains. The Turkish army is advancing on the coast. The Armenians are being driven out of their homes and are being killed in the mountains.

Talaat Pasha's Official Orders Regarding the Armenian Massacres, March 1915. January 1916

March 25th, 1915

To Djemal Bey, Delegate at Adana:

The duty of everyone is to effect on the broadest lines possible the realization of the noble project of wiping out of existence the well-known elements who for centuries have been the barrier to the empire's progress in civilization.

We must, therefore, take upon ourselves the entire responsibility, pledging ourselves to this action no matter what happens, and always remembering how great is the sacrifice which the Government has made in entering the World War. We must work so that the means used may lead to the desired end.

In our dispatch dated February 18th, we announced that the Djemal had decided to uproot and annihilate the different forces

Figure 3: Screenshot from a student-authored interactive text, "The Violations of Human Rights."

- How might you use iBooks Author to signal to a reader that there's an embedded interactive element?

Students were asked to critique existing examples of digital texts based on good design principles. Students also reviewed each other's work based on these design principles (see **Figure 3** for a sample of student design).

Evaluating, presenting primary sources. Collaborating in small groups, students considered teacher-assigned primary sources that were printed on worksheets and projected onto a whiteboard at the front of the class. Students were encouraged to label what they deemed significant parts of a primary source using dry-erase pens on the whiteboard. In one instance, a 1967 Cultural Revolution propaganda poster—titled “Scatter the old world, build a new world”—showed one of Mao Tse-Tung's “Red Guards” sledgehammering the trappings of counter-revolutionary behavior. Students annotated the image on the whiteboard with words describing what they saw: “Red Guard member,” “Buddha,” “foreign influences,” “angry expression,” “[music] record,” etc. (see **Figure 4**). Ideally, this exercise would inspire students to take a similar approach in designing their digital textbooks. Rather than a whiteboard and dry-erase pens, students would have the option to include “moving callouts,” or captions, and interactive photo galleries, which enable them to touch an image and have an explanatory text move to the fore.

Developing a research question. Prior to the content-creation phase, each student developed a research question and selected at least two primary sources that, in their view, addressed their chosen historical question. Students were given freedom to select questions and sources of their own choosing, as long as they mapped it to one California State Standard and ensured that it did not overlap with the selection of other students within their class.

Working with digital archives. Through this mini-session, we introduced students to using the project's digital library via Google Docs. The session highlighted both the hands-on practical concerns of working with digital archives—from downloading, embedding, and sourcing each item—to more general discussions around editorial judgment.

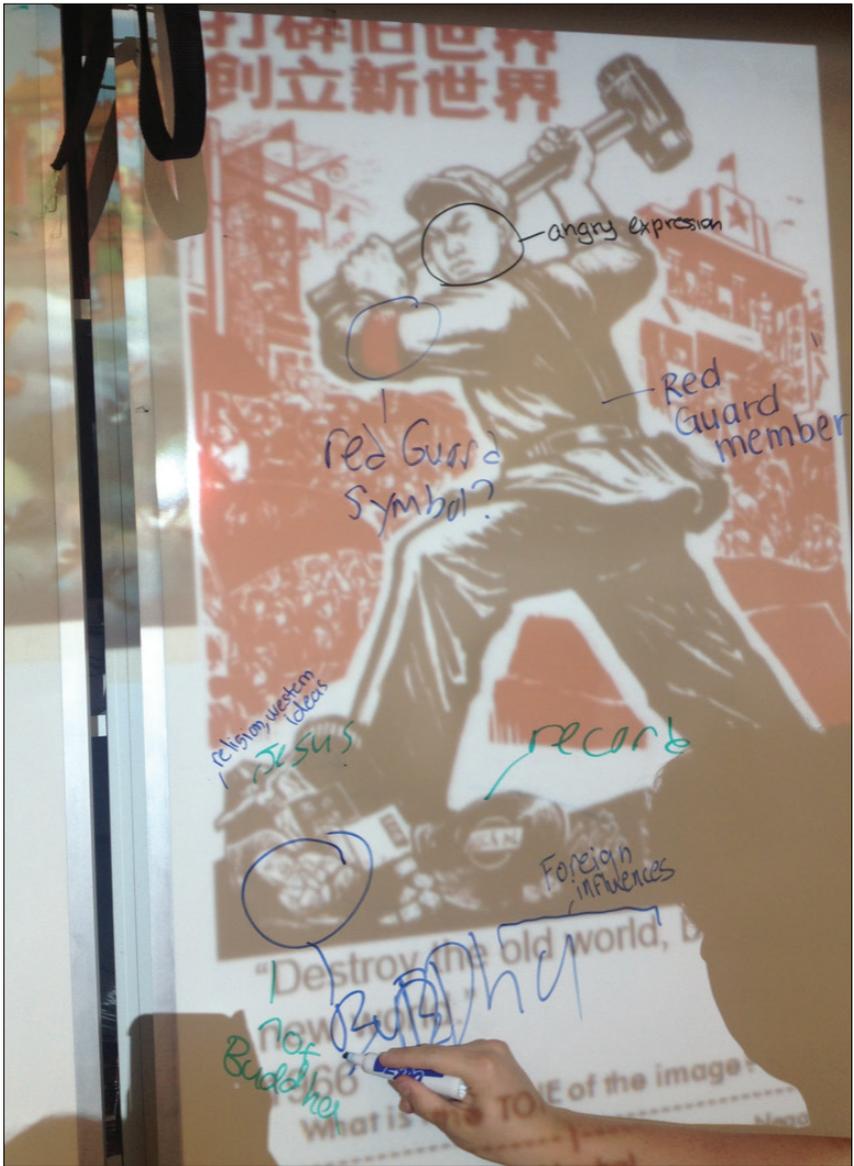


Figure 4: Student annotations for a 1967 Cultural Revolution propaganda poster.

Employing multiple perspective taking through primary sources.

We led students in a discussion of how they might synthesize primary source documents in order to present a variety of historical perspectives using iBooks Author and the other technology at hand. We emphasized the importance of moving beyond the typical, albeit limiting, “two sides of an issue” simplification employed by many textbooks and media reports.

With approximately ten physical artifacts in hand, the team’s history teacher described the variety of primary and secondary sources that could be used, such as international textbooks, postcards, posters, and letters. The presence of physical artifacts is in line with the goal of stimulating students’ affective engagement with history.³⁸ Elizabeth Yeager and Frans Doppen found that many students had difficulty presenting multiple perspectives in their group projects creating museum displays concerning the decision to drop the atomic bomb on Japan.³⁹ However, with the ease of content-authoring software—coupled with an extensive digital library of curated sources—one student at our site presented the Japanese perspective of the atomic bomb by including a particularly graphic image from a Japanese children’s book in his chapter (see **Figure 5**).

Evaluating and presenting textbook chapters for peer review.

During the penultimate session, students moved between their small groups to experience their peers’ digital chapters on laptops and iPads. Students discussed both what they liked about each other’s chapters as well as suggestions for improvement, as preparation for their front-of-class presentations, to be held during the final session. In the capstone to the intervention, each student demonstrated his or her chapter and discussed which multiple perspectives were included and why. Students also conducted self-evaluation of their team’s work with a rubric collaboratively developed by the research team and cooperating teacher.

Student Textbooks

In all, forty-seven student groups created seventy-three interactive chapters that consisted of 321 digital “pages.” Each pair analyzed between four and twelve primary sources. Of the student chapters, 72% displayed above the minimum of two perspectives required



This Japanese children's book shows us the feelings of the Japanese people towards the effects of the atomic bomb. This artifact was created shortly after the bombing of Hiroshima- approximately after 1945. The purpose of this photograph is to illustrate the effect of the Hiroshima bombing on Japan. A Japanese artist, who experienced this event, depicted the Hiroshima bombing in Japan. The audience of this image was intended for Japanese children- to show them how terrible this event was. The message communicated through this illustration, is that Japan suffered greatly from the atomic bomb-as we can see burned civilians, destroyed houses, children trapped under beams of wood, and a burning city.

Figure 5: Screenshot from a student-authored interactive text, "Hiroshima Bombing."

for the project, which we consider a proxy for student engagement. While the current iteration of our exploratory study has no control group for comparison, we did compare the students' output with how matching topics were presented in their assigned textbook, *World History: Patterns of Interaction*.⁴⁰ Unlike their reference textbook, which seldom explicitly emphasized multiple perspectives of historical events, 78% of the students' chapters represented at least one historical issue using multiple perspectives; these groups constructed their own understanding of events through the selection, organization, and narration of primary sources. Additionally, 75% of student-generated content demonstrated two or more usages of digital affordances of e-books (e.g., scrolling sidebars, 3D elements, etc.), whereas the assignment only required students to use one. While 59% of their pages still maintained a design approach to content similar to their printed textbook, the remaining 41% opted to design their textbook narratives in less traditional ways. These students commonly opted to make primary sources center stage, rather than push forward an authoritative narrative.

Another important feature of these texts is that students not only chose and described their primary sources, but they explained their rationale for choosing each particular source⁴¹ (see **Figure 6** and **Figure 7**). In this way, they reinforced for each other the idea that historical narratives are not Platonic ideas merely recorded as fact, but rather narratives constructed by the beliefs, emotions, and intellect of their creators.

Overall, although some chapters utilized sources readily available online without interrogating their value, about half of the students voiced content and perspectives that have been minimally represented in, if not entirely absent from, their official state curriculum. For instance, despite the fact that California has a large community of the Armenian diaspora, the printed textbook included sparse mention of the Armenian genocide. In the printed textbook's sidebar, titled "History in Depth," fewer than 100 words described how representatives of the Ottoman Empire treated Armenians prior to and during World War I.

By contrast, one student included a multi-page section on the Armenian genocide, demonstrating potential for students to introduce perspectives absent from the officially available textbook narrative (see **Figure 3** above). In the 300-word scrolling sidebar she created,



Soviets at the Yalta Conference

The following is a political cartoon created by Paul Plaszke that appeared in the Chicago Tribune shortly after the Yalta Conference in 1945. It depicts the leaders of the USSR, the US, and England sitting around a table playing poker. In this scene, the man representing the Soviets, Stalin, is taking all of the chips, representing Europe, China, and India.

Figure 6: Screenshot from a student-authored interactive text that presents a primary source along with the student's rationale for choosing the source.



Misconception of the Yalta conference

Here we have a political cartoon published in the Soviet magazine Krokodil on 30 July 1945. In it we can see three cars pulled up next to each other with American, English and Soviet flags raised from each. It is important to note that the Soviet car is in the middle, symbolizing that they were the focus point of the conference. The three men are all smiling, laughing, and smoking together joyfully as if celebrating a job well done and the resolution of their conflicts. In publishing this, Krokodil was trying to spread the message that the conference was a good natured discussion between the nations and that it came to a successful ending. Do

Figure 7: Screenshot from a student-authored interactive text that presents a primary source along with the student's rationale for choosing the source.

the student explains the massacre by comparing two perspectives of the event through side-by-side images. For instance, on the right side of the page, the student embeds a scrollbar that reprints, in full, the document “Talaat Pasha’s Official Orders Regarding the Armenian Massacres,” which includes the following passage:

The duty of everyone is to effect on the broadest lines possible the realization of the noble project of wiping out of existence the well-known elements who for centuries have been the barrier to the empire’s progress in civilization....we announced that the Djemiet has decided to uproot and annihilate....

Her primary source selections create a decidedly different reading experience than the one from the textbook’s passive account. While some have argued that classroom time constraints lead to truncated versions of sources,⁴² the scrolling sidebar feature enables the student to present sources in their entirety and not limited by the space issues inherent in printed textbooks. The way the student uses provocative visuals and texts invites controversy and stimulates discussion in a way that scholars suggest is paramount to encouraging student engagement.⁴³ As another student wrote, “I found there are a lot more perspectives on history than I originally thought, and the scrolling boxes really helped to categorize them.” Thus, readers of her chapter can engage with her account in a way that would be more difficult using printed textbooks’ abbreviated sources and limited sidebars.

Besides the affordances of technology, the content of student-authored textbooks is not beholden to special interest groups or large publishing houses which, conscious of their reputation and profit margins (respectively), are often keen to limit controversy in ways that lead to particularly bland historical presentations. In this vein, many students opted to include particularly shocking images to engage the reader with the barbarity of many episodes in history, whether it be the famine in Ukraine or the atrocities in the Belgian Congo.

Student Engagement

Admittedly, measuring engagement is difficult. However, there are some tangible methods for ascertaining student engagement. For example, 77.5% of our students indicated on their final exit slips

that they had learned “a great deal” concerning multiple perspectives and/or one or more of our technology components (which concerned learning how to use the tech equipment, navigate the software, and create digital textbooks), and the remaining 22.5% of students indicated that they had learned “much” in at least one of these same aforementioned categories. Additionally, 13.5% voluntarily added commentary (without prompts) that they really enjoyed the project, including comments such as they “really like it,” “had a lot of fun,” “it was really fun and creative,” “I always wanted to make an app and this is close enough,” “I understand the concept better and want to do it again,” and “thanks so much.”

Of course, given that students are assessed in part based on their participation, there may be a selective bias in favor of positive student feedback. Given the time constraints and uncertainty of how much time would be needed to complete their respective projects, the teacher awarded full credit to all student work that achieved the minimum required number of historical perspectives, technology affordances, and use of primary sources. Thus, students who developed digital chapters that exceeded minimum requirements evidenced some level of engagement. Of the four groups, roughly a third of students exceeded the minimum requirement of two primary sources for their chapters.

Further, our cooperating teacher found that students of all achievement levels demonstrated greater understanding of multiple perspectives than through previous non-technological methods, which contradicts some previous findings suggesting such pedagogical methods were less successful with lower achieving students.⁴⁴ The teacher explained:

Students have to create meaning through action...learning a subject isn't opening up your brain and having the knowledge pour in...when each person learns something, he or she is creating that knowledge anew...opportunities where students are forced to really actively create knowledge...is what I try to do all the time. This was a very tangible example of that.

This corresponds with our own findings based on student input. When prompted specifically on their final exit slips whether they learned “little,” “some,” “much,” or “a great deal” concerning multiple perspectives, only five students (about 5.6%) reported learning “little” and sixteen students (about 18%) reported learning

“some.” Conversely, 76.4% of students reported indicated learning “much” or “a great deal” by engaging in the digital project. Student feedback included comments such as:

“I was able to see perspectives clearly, and understand why the other perspective made the actions/decisions they had made.”

“I now know how to properly analyze things, and what to look for in an artifact.”

“I learned more about having more perspectives side by side compared.”

Thus, our findings also suggest the potential of digital tools to shift learning away from the traditional centers of power toward the ideal of a constructivist history class that places the students at the center of their learning experience.

Limitations

The time and effort required for generating “thick narratives” proved difficult in a school environment limited by time, resources, and competing structured learning goals—an outcome that Counsell and other researchers might have anticipated.⁴⁵ Our initial curriculum had been designed for fourteen days of class time with ninety-minute sessions. However, due to unexpected changes in the schedule associated with end-of-the-year standardized testing, coupled with student school-wide participation in local service learning projects, our team was required to condense our curriculum into nine days. Furthermore, with regard to resource availability, not all of the students had the needed software or computers at home, which hampered their potential to invest more time in the project.

Many students expressed an eager willingness to continue working on their chapters at home. Roughly 20% of students used the open-ended “additional questions” answer box on their exit slips to lament how they didn’t have enough time and wish they had more. This was because the project required students to split their focus between the various technological, historical, and design aspects of the project, which limited their ability to neatly integrate all of these into their digital pages. Approximately 18% of students used the “additional questions” box prompt to express some concern about not having enough time for the project and/or the desire to work on the project at home.⁴⁶ Some representative comments are:

“Can we have more work time? That is honestly what is most helpful!”

“How will we have enough time to finish this whole project in class?”

“Time consuming, how are we supposed to finish on time?”

“I’m a little stressed about it...I need more time.”

“I am worried about not having enough work time in class.”

“How much time will we get tomorrow?...Can we use these at home?”

“If we were to create an extremely good product, I think we would need a lot more time to work on the project.”

Other students wrote of their frustrations on exit slips: “The hard part is there is only one computer” and “In the amount of time we’ve been given...I haven’t actually been able to get anything down but when I do I have many sources which will allow me to include multiple.”

In hopes of offsetting time constraints that curtailed students’ enthusiasm, our future iterations of the project will focus on engendering classroom environments in which students will have more time and/or more flexibility to work on their digital textbook.

One other issue in the school worth mentioning was the unreliable consistency and speed of Internet access. As our collaborating teacher had his classes in different rooms, the students who were in a room with a weaker Internet connection were not only less productive, but expressed frustration at not being able to access online sources in a speedy manner. Some representative comments include students complaining about the Internet speed (ten students), with some arguing that they couldn’t get much done because “the wifi is soooo slow.” Amid the push for greater technology in the classroom, this is a humbling reminder that infrastructure obstacles still remain. These can hinder the best-laid plans for integrating technology in the classroom, especially in resource-poor classrooms and where teachers lack the TPACK to implement such a project.

Initially, a fair number of students had concerns about the difficulty of the assignment, particularly the task of mastering both the technology and the process of multiple perspective taking. Among the student feedback from early on:

“I haven’t used it yet to present multiple perspectives. I’m really confused and lost.”

“We haven’t been able to present multiple historical perspectives yet because we haven’t quite had the chance to explore the software.”

But in final exit slips, only three students emphasized how “confusing” and “hard” it was to use the technology, compared with about 62% that indicated that they learned “much” or a “great deal” using the technology. Comments concerning learning growth include:

“I had no idea what I was doing at first, then towards the end I had a good grasp.”

“Before the project I really struggled, but because we got a lot of time to use the computer I was able to learn more about it.”

“I now feel comfortable with the software, and I think that I could make a much better textbook now than I made.”

“I knew a lot before but I know more now!” [about iBooks software]

“I personally thought that iBooks author was going to be overwhelming, but with the prompts I was able to get through it.”

“I have learned so much with this software and now I feel great about it.”

“I never made a textbook and I rarely boast or at least boast seldom, but the textbook I was able to create is something I am proud of.”

Still, a few students struggled and recognized that they had not delved deeply into multiple perspective taking through the primary sources. In particular, two expressed the following concerns:

“All I’ve done was copy and paste my artifact analysis on the iBook thing. I still don’t understand iBook very well, it’s confusion.”

“I know how to do that, but unfortunately we haven’t gone too much in depth.”

On net, however, most students expressed positive learning outcomes, with the most important takeaway being that they felt the time allotted for the project was too short to get the most out of the project and to be able to create the best digital textbook chapter that they felt capable of designing.

Scholarly Significance

Our research provides both a theoretical framework for developing students’ historical thinking skills and a practical, pedagogical template that history teachers can use in their classrooms. Specifically, e-book authoring software provides one method for helping harness

students' creative impulse by tapping into a technological medium in which they are already well versed, given their prolific use of social media. It promotes moving away from a passive model of primarily consuming academic content—that has often dominated educational practice for the past few centuries—to one in which students take charge of their own learning. The project enables students to liberate themselves from the traditional disciplinary constraints of history class by incorporating the principles of design thinking into their historical thinking as well as applying learning technology to their historical presentations.

Our results lend support to the role technology can play in assisting constructivist pedagogy, while acknowledging that, without a cooperating teacher who is well trained in applying pedagogical content knowledge, it significantly limits this facilitating role. Further, while a curriculum unit comprised of only two weeks can generate notable evidence of historical thinking, student engagement, and creativity, students' textbooks would likely surpass expectations if afforded sufficient time to develop their full potential.

Although the use of primary sources and digital tools in the classroom presents challenges, our research considers a new method for taking on these challenges. Our research suggests various strategies that history teachers can employ in their classes to help students author, and share with each other, historical accounts that incorporate primary sources in digital textbooks. Encouraging students to be agents in their own learning is a valuable strategy to help them develop media literacy. Such empowerment can also help contribute to developing a more polyvocal global village, built with a foundation of historical thinking and a commitment to explore the learning potential afforded by digital technology.

Notes

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