# HistoSynth: Comparative World History in a Collaborative Multimedia Environment

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# 1. Our Goal

We believe that historians exercise their skill by analyzing primary and secondary sources, and by creating documents which show new conclusions. Students are often exposed to the reporting aspect but cover analysis only lightly. We cannot turn back time; even a realistic simulation makes assumptions. Instead, we want to uncover the sources of analysis in order for students to get closer to the actual events. Students will develop reading comprehension, analysis, and writing skills, in the context of a history course. At the end of a history course which includes our system, we expect students to understand how to read historical documents, synthesize facts and ideas from the documents, and write history papers based on that evidence.

# 2. Users and Context

Our primary users are high school students involved in a history class. The learners have at least basic computer skills, no major disabilities, and speak functional English. They have some history knowledge from elementary and middle school and some writing skill, typical of most high school students.

Our secondary users are high school history teachers. Their requirements match the learner requirements, except that the teacher is expected to understand the domain better than the students. The teacher also will be trained on basic functionality and administration of HistoSynth. In our system, the teacher has a defined role, beyond merely facilitating the role of the learner. These roles include classroom management and student assessment.

We envision the system operating in a school computer lab environment. We expect classes to last 45-90 minutes, with 20-45 students in the lab at a time. While HistoSynth does not require that each student have their own computer, the student-to-computer ratio should not exceed 3 (optimally, the number is less than one).

We limit the domain of history to be comparative political and cultural world history from 1000 A.D. to the present.

# 3. Learning Theories

- Cognitive Constructivist
- Situated
- Behaviorist

## 3.1. Cognitive Constructivist

The cognitive constructivist perspective to learning is about mental models. Knowledge is largely factbased and stored in data structures which support blocks of data and their relationships with other blocks of data. Learners develop their mental models through experience of similar situations. As the number of experiences increases, people refine their mental models of the reality that they sense. People compare a current experience with their knowledge of the world. A person can identify an apple since it closely resembles the prototypical mental representation of an apple (more closely than other objects, such as a pear or a table). Learners can leverage the relationship structure to understand new information in the form of analogy. Mental models are an intuitively compelling approach but are weaker when it comes to explaining human reaction or collaboration.

History provides many examples of how societies develop and interact. The traditional exploration of historical events has been through the use of primary and secondary sources. While the sources are often written materials, they may also be pictures or artifacts such as pottery. These sources provide a multifaceted but incomplete picture of the reality of a community at a particular place and time. We believe that the cognitive constructivist perspective has much to say about understanding this type of information.

HistoSynth will provide an environment with multiple representations of a particular event, at a particular time. It will make primary and secondary sources available to users, and it will show the source relationships to each other and to the actual events. For example, a diary of the Chicago fire will visually connect itself with the fire's events. A reference about the fires that uses the diary source will link itself to the diary. We also want time and space exploration to be straightforward. Learners must be able to manipulate the currently available time span. They must also be able to limit the locations and perspectives of a particular event. For example, a view of 1500-1700's Mexico could provide Spanish or Native source filters on the visible information. We intend to use information visualization techniques to assist in source navigation.

In order to develop the learner's mental constructs, we will provide event pattern matching inquiry. How does "history repeat itself", and what events seem rather unique? The answers to these questions support high-level historical analysis.

Most importantly, the learner's work will become part of the system. Class activities can build primary or secondary sources in the form of interviews or reports. This approach will build a data set which will grow over time. It will also provide motivation to create quality work which will later be used by the student's peers.

#### 3.2. Situated

The situated perspective is about the role of the community in cognition. Knowledge is held within a group. Learning is gained by providing access to additional knowledge. Discussion and questions provide channels for distributing knowledge. The knowledge-group may be a small group, classroom, school, district, society, or the Earth. It may involve only humans, or include textbooks and computers.

We intend to support knowledge retrieval and distribution. Fact-based knowledge in the historical domain is typically related to primary and secondary sources. These sources will be shared and easily marked up. The sources cannot be edited; instead, learners can write questions or statements about the text in a margin to the side of the text (text is used loosely, to mean any source). These notes can be seen by anyone else; questions can be answered at the point of inquiry.

The system must be explicitly shared. An instructor or student can "see" that other people are online and that many others have built sources or comments in the system. We believe that learner understanding of history as a shared and organic development will support learner source and comment inputs into the system, leading to understanding of historical content.

### 3.3. Behaviorist

Behaviorism is based on a stimulus-response model. We need not know how the mind works in order to condition its behavior. Through repetition and reinforcement, learners will acquire the content. While we believe this approach works to some extent, it is not very effective.

Since we expect the system to be used in a traditional U.S. school environment, we expect student assessment in the form of grades. This technique is built off of the behaviorist idea of reinforcement. We do not intend to directly support student assessment improvements. However, we expect that student reading comprehension, writing skills, and history analysis will improve better than a purely behaviorist approach (given the same time frame and similar students). Therefore, traditional grading techniques on a student's test or paper-source should lead to a grade improvement. In addition, we hope to facilitate teacher assessment by supporting management of the sources selected for assessment.

# 4. Educational Approaches

- Cognitive Apprenticeship
- Learning By Design
- Goal-Based Scenarios

## 4.1. Cognitive Apprenticeship

A cognitive apprenticeship approach to education argues that there are many parts to professional knowledge, and that most of these parts are not visited in a traditional learning environment. By mimicking professional practice, learners can develop a wide variety of specific and underappreciated skills. Within HistoSynth, we are attempting to copy a historian's practice of gathering sources, synthesizing ideas, and producing reports which feed back into the system as a new source.

### 4.1.1. Modeling, Coaching, and Scaffolding

The written reports generated during the learning process will provide the teacher with insight into how the students learn. From these written reports, the teacher can identify the proper type and amount of modeling, coaching, and scaffolding needed for each student. These reports reflect the student's current ability in all three areas of focus in this curriculum (reading comprehension, writing, and historical analysis), allowing the teacher to identify how to focus efforts for the individuals as well as the class as a whole.

During the collaborative portions of HistoSynth, each student in a group studies a different aspect of a historical event. Then the group comes together to synthesize their analyses into an understanding of the major event. In these group activities, students find themselves in a teacher role, as each must explain her analysis to the other group members. This requires the students externalize their thought process when trying to explain how they analyzed the sources and what sources they chose to use, thus alternating the teacher and learner roles. In addition, during the group activities, the teacher will act as a consultant (much like in "Schoenfeld's Method for Teaching Mathematical Problem Solving" section of "Cognitive Apprenticeship" [1]) asking the key questions: What they are doing, why they are doing it, and how will this help synthesize their analysis. Over time, the teacher's need to ask these questions will fade as the group learns to ask the questions themselves.

## 4.1.1.1. Modeling

The teacher provides most of the modeling by playing the role of the expert and demonstrating the process of historical investigation. During this process, the teacher will not only demonstrate the process but also highlight the thoughts and motivations behind their actions. A local expert historian may be used to provide additional modeling either through online interactive chats or in-person presentations.

The software will provide a support package for the teacher that provides them with "talking points" and "key concepts" inspired by the methods used by expert historians. The purpose of these is to stimulate and develop the student's cognitive skills, not just mimicking a historian's actions. An example of a talking point that can be repeated to the students multiple times is "About 95% of historians use primary sources" [3]. An example of a concept is: "Building context is the sine qua non of historical research...the totality of the records provides information that no individual record can"[4]. The talking point is easy to convey to students in a short amount of time whereas the concept of history in context is something that will take time for students to understand, but the teacher should model both of these practices.

#### 4.1.1.2. Coaching

The teacher provides coaching based on the reports during the individual stages and observations during the collaborative stages by reinforcing and reminding the students of the "key concepts" and "talking points" that were presented in the modeling stages.

Throughout the curriculum, the software reinforces the key concepts at critical times and shapes the student's investigations with guiding questions and suggestions. An example of this would occur when students consult secondary sources of information, the software avatar would offer suggestions to look at the primary sources of information plus provide a graphical representation on a timeline showing the connections between primary and secondary sources.

#### 4.1.1.3. Scaffolding/Fading

The teacher will have control over fading the support offered by the software. The software provides the teacher with options to increase or decrease the amount of intervention offered. Early in the learning process, the teacher could enable the software to intervene frequently with hints and suggestions while later, as the students learn the expert practices, the software intervention could be tuned down to offer very little or no support.

The software offers several variations of scaffolding. The format and design of the report tab encourages the students to follow expert methods of studying history, and it encourages the students to organize their thoughts. The software also offers an avatar (Ben Franklin) that provides intervention in the form of helpful hints and suggestions that are designed to help the learner understand the expert practices.

#### 4.2. Learning By Design

From LBD we borrowed the concept of getting the students involved and engaged early in the process with a launcher unit and "messing about".

The main idea that we borrowed from LBD is the concept of ritualizing the process. This provides the structure needed to function in the classroom environment while affording the students time to explore and investigate. We plan on using forms and interactive webpages to provide the formal processes that define the ritual.

#### 4.3. Goal-Based Scenarios

Making the study of history interesting to high school students is one of our greatest challenges. In the spirit of "An interest is a terrible thing to waste," we hope to make a system that is flexible enough to allow students to pursue their own interests in history. Early in the process, the software takes a survey of students interests. A student interested in soccer could search on the effects of World War II on the World Cup (which was not held from 1938-1950 because of the war). The software would link them to diaries or letters of the great athletes from all over the world that had to become soldiers. They could analyze how instead of athletes representing their countries on soccer field, they end up representing their countries on the battlefield. Another student interested in music could find links about famous musicians of an era. They could compare a musician's life with those of other musicians in different parts of the world and how the events of history affected them. Other students that are interested in genealogy may use their own family lineage to find interests in a particular period of history. The curriculum will implement the capturing and capitalizing on the students' interests early in the process to draw the students into the era of history that is being studied. We hope this approach will align the learning goals of the students with goals that they already possess.

GBS also inspired us to focus on the learning of skills and not on the ability to recall facts. We are focusing on analyzing history and comparing events across cultures and geographical areas. We hope to teach analysis, critical reading, and critical writing. We expect the students to learn historical facts because the student finds them interesting, but memorizing history is not our objective.

# 5. Motivation and Engagement

The problems of motivation and engagement are important and difficult ones in our project, for two reasons. First, our environment is a traditional classroom, and the learners are forced to be there, so they are probably not intrinsically motivated to learn the material. Second, history is a subject whose relevance to a learner's life is not obvious, perhaps especially so to children. Thus, for most of the students, we will have to create external motivation and maintain their interest throughout the entire course. We have already rejected the behaviorist approach to learning, so we cannot rely on a simple punishment-reward system to engage the learners. Instead, we choose to follow the situative perspective and to borrow some ideas from LBD. The main tools we use to engage students are collaboration, launcher units, and gimmicks.

- Collaboration
- Launcher Units
- Gimmicks

### 5.1. Collaboration

We have tried to give a significant role to collaboration in HistoSynth. Students are encouraged to work together both outside and in the software. For example, when researching for a report, students will get together in groups, and each is responsible for a different part of the topic, so that no one student knows everything about the subject. This is informed by the situative perspective, where knowledge is distributed in the system, and agents work together to solve problems. In this way, the students begin to form a community of historians, and as the students become experts in their particular subjects, they each become a more central part of that community. This should motivate learners, as they are able to participate more and help out their fellow learners with knowledge that only a few in the community possess.

Within the software, students are able to collaborate with history experts and with other students in

other classrooms. In this way, they can gain more knowledge and share what they have learned with others. Being a part of this even larger community should motivate the learners, as they are able to show off to others or learn even more from an expert. Finally, through the software, students will be able to share their knowledge with future students. As they read documents and learn about historical events and patterns, students can put their notes, questions, reports, etc., back into the system for future use. Knowing that their work will add to the total sum of knowledge in the community and that it will be used by students in following years, the students will be motivated to do good work.

#### 5.2. Launcher Units

To initially engage the learners, we borrow the concept of launcher units from LBD. These are small projects done at the beginning of the year to help show the students why history might be important to them and why it is interesting to learn about. We want students to realize that history is not a dead thing that happened only to famous people in distant times. These projects can also be used to introduce the students to the software. We have so far come up with two ideas for launcher units. One possibility is students researching their family trees. This would be used to show them their place in history, that historical events affect all people, and that history continues to be created. Another idea is to have the learners create their own historical documents as primary sources, imagining that future historians would be using these documents to understand our time. The students could write about their own lives or about important events that they had witnessed, or they could interview their parents, relatives, war veterans, etc., about their experiences. By providing students an opportunity to become a part of history, we hope that they will be engaged in the study of it.

#### 5.3. Gimmicks

Finally, to maintain interest over the course of a semester or year, we have included some gimmicks in HistoSynth. These are meant mainly to keep things fresh in the middle of a unit, when the impact of the launcher units may have diminished and collaboration may not be as exciting. First, we include a lot of multimedia objects in the system, which should be a more interesting way to learn about specific historical events than static text and images on a page; this is a key advantage we have over books. We also include opportunities for students to generate their own alternate histories, a sort of "what if..." exercise that lets them be creative and hopefully helps them determine the key causes of events. A third gimmick is to occasionally supply students with an entertaining anecdote or strange occurrence ("history's mysteries") during a certain historical period. The value in this is to provide a small distraction from the more straightforward events in history and to show students that historical analysis is an ongoing process with problems that even experts disagree on. A final gimmick is games. At certain times during a given unit (probably near the end), the teacher can put on a game for the students to play, such as Jeopardy, a historical debate, a reenactment, or other similar activities.

## 6. Technology

- Scaffolding
- Collaboration
- Multimedia
- Visualization/Manipulation of Multiple Representations

#### 6.1. Scaffolding

One of our goals with the HistoSynth software is to teach students how to read historical documents. We can build into software tools that help them do that. Edelson, Gordin, and Pea[5] used worksheets in their Radiation-Budget Visualizer to determine the types of activity that might be done with the

software; they remark that the questions "helped introduce students to the process of looking for patterns in data." Although we are using texts, not visualization software, we can still have questions to help students find patterns in those texts. It is possible to do this with printed handouts – and in fact it must be, since not all classes will be able to go to a computer lab every day. However, technology can help create a closer link between guiding questions, comments, definitions, etc., through dynamic markup, hyperlinks, pop-up windows, etc.

Technology also makes it possible for students to scaffold for one another in a way that is difficult with paper. For instance, a student might put up a definition of a word they found difficult or make a comment on part of the text or link to part of another related article. These comments can be made available to the rest of the class to help the other students.

Technology can also play a role in scaffolding the writing process. Anderson, et al.[2] use cognitive tutors to help LISP students program by having several models of how a program might possibly be done and comparing the student's current progress. There are many ways one might write a history paper, so having something like a cognitive tutor for the entire writing process is not feasible; however, there are many well-structured concepts that make up the writing process for which we might make use of agents like the cognitive tutors, for instance citations, bibliographies, grammar, and general structure. We can also draw from the example of the advisers in Schank, et al.'s Broadcast News[9], which made content suggestions based on common mistakes.

#### 6.2. Collaboration

Technology can facilitate collaboration both between students and with people outside the class. It can help guide collaborative writing much in the way described above for the overall writing process, but with more emphasis on organizing cooperative work. It can also help students collaborate outside of class through messaging or chat systems.

In addition to helping students coordinate amongst themselves, technology, particularly chat, can help students interact with guest speakers that the school might not be able to physically bring in. These could be experts in the field that students might interview about their research techniques, or they might be people (e.g., an astronaut) that students are interviewing for a launcher unit described above to create their own primary and secondary sources.

#### 6.3. Multimedia

With technology, some types of sources become available that might not be otherwise accessible. Technology allows the use of sound and video in addition to text and images that might be found in a textbook. This is most applicable to recent history, where video is often a primary source, but it can be used for other eras as visual simulations to help students understand complex things like migration or troop movements.

#### 6.4. Visualization/Manipulation of Multiple Representations

Historical writings can have complicated relationships to events, to one another, to geographic location, etc. It can be difficult to keep track of who influenced whom and what might have happened in one place but not in another until twenty years later, and how this might have affected what people wrote. The computer can help us represent those connections in different ways and allow manipulation of those representations in a way that makes the abstract connections more concrete.

We should take a lesson from World Watcher on this, which attempted to do the same thing with weather. Students who used their software had trouble understanding what the software could do for

them. This may be less of a problem with history, which does not need as much technical jargon, than with weather, but it still implies that care should be taken when introducing students to software with complex visualizations.

## 7. Scenarios

- Comparative Historical Analysis: The Opium Wars
- ReportMaker Walkthrough
- Alternate History Gimmick: The Battle of Vienna

## 7.1. Comparative Historical Analysis: The Opium Wars

Frank is studying 19th century world history during a part of his class. The most recent assignment asks for a comparison of views on a particular topic. Frank has heard a little about the Opium Wars, and feels that Britain and China would provide a nice contrast for his paper.

After logging into HistoSynth, Frank selects the "Explore" page. The map comes up. Frank knows enough about geography to locate England and China. He first click-drags a box around England, and then China. The two countries are displayed in the lower map windows. On top of the maps are shown about 20 sources per country. After hovering over one (which reads "Magna Carta"), Frank realizes the time scale is too big, and reduces the time period from 1800 to 1900. Still unsatisfied with the source results, frank selects the "international relations" filter and tells HistoSynth to limit the results to sources which contain the word "opium". Britain has 8 results, while China has 3. Frank drags these results into his source clipboard for later use in the report.

Frank then selects the "timeline" view of the "Explore" section. He limits the results to those of England and China, and filters the events to only show those related to the word "opium". A few lines on the event timeline come from China and from England. There are some primary sources and several secondary sources which are linked to these events. Frank looks for summative works (secondary sources with many links to primary and secondary predecessors) and drags a couple to his source clipboard. Frank then instructs Histosynth to print all of the sources for offline reading.

## 7.2. ReportMaker Walkthrough

During the launcher units, students are able to browse multiple historical sources that cover the period leading up to and immediately following the bombing of Pearl Harbor on December 7, 1941. The software categorizes the sources by possible areas of interest, such as various sports, types of music, or automobiles, thus limiting the number of sources to those of interest to the student. The student reads and writes short summaries of his findings. StudentA, who is fascinated by current day sports cars, could easily find primary sources that discuss the activities of Toyota, Honda and Mitsubishi companies in the years leading up to and during World War II; these sources lead StudentA to write a short summary on the challenges of building airplanes, motorcycles, and automobiles with the limited resources that Japan had available.

The teacher then assigns students to groups and assigns each student an aspect of a topic in history to research, preferably aligning the student's interests to their aspect of the topic.

As an example:

Topic: Should the United States have declared war on Japan in World War II?

- StudentA Why did Japan think it needed to bomb Pearl Harbor?
- StudentB What was happening in China at this time?
- StudentC What was Japan's relationship to Germany?
- StudentD What were anti-war activists in the U.S. saying/doing prior to the bombing?
- StudentE What were pro-war activists in the U.S. saying/doing prior to the bombing?

While StudentA researches the situation in Japan during 1941, he continually goes to the Report screen in the software. The report section of the software has three sections to encourage students to write down and organize their thoughts.

#### Part I - The Evidence Aggregator

On the top of this window is the question that the teacher assigned them to analyze. StudentA would see "Why did Japan think it needed to bomb Pearl Harbor?" While working in this tab the Ben Franklin avatar may pop up offering additional advice and suggestions. Some of the questions are of a general nature, like: "What are you trying to find out?" or "Why is this important?"; however, the software allows a teacher to integrate their own questions. Ben Franklin may also offer help specific to their problem like suggesting relevant sources of information. For each relevant source the student looks at, they fill out a worksheet with answers to the above-mentioned questions and as well as a summary of their findings.

#### Part II - The Pre-Writing Worksheet

On this portion the students record their answers to the question posed to them by the teacher in the Argument/Thesis box. StudentA may propose: "Japan bombed Pearl Harbor because the U.S. was interfering with their car making industry." The thesis is the student's work and the software allows them to update or change it as the research progresses. Below the thesis box the student develops main points that they must prove to defend their argument and keep track of the evidence they found and the sources they used. In this tab, Ben Franklin may also appear and offer help based on the level of intervention set by the teacher.

#### Part III - Final Report

In this tab, the student writes their final report primarily from the information they recorded in the other two tabs. Ben Franklin has a constant presence in the agent box but now he focuses his comments mostly on writing style, grammar, formatting, and spelling. This final report is the product that the student presents to the group at the collaboration stage of the curriculum.

#### Brief concept of the collaboration stage

During the collaboration stage, each student demonstrates to the other group members what they learned and tries to convince them that their argument is true. One of the main concepts taught in this portion is the idea of history in context. By the end of the collaboration stage, the group will form an answer to the topic question: "Should the United States have declared war on Japan in World War II?"

#### 7.3. Alternate History Gimmick: The Battle of Vienna

This gimmick is intended to show students the key causes of important moments in history. For this particular example, we will use the Battle of Vienna in 1683, where the Ottoman Empire sieged Vienna but was defeated by an unlikely alliance of Austria, the Polish-Lithuanian Commonwealth, the Papal States, and various German principalities. It is significant in history for marking the beginning of the decline of the Ottoman Empire as a threat to Europe as well as the rise of the Habsburg dynasty.

The class is just beginning the unit "The Rise of Europe" (1492-~1700), and the teacher wants students to get excited about it, so he starts off with a gimmick to engage them in the material. At the beginning of the year, the teacher had added all the sources he wanted to use for this unit. But now he wants to disable some so that his students can instead come up with their own versions of the outcome of the Battle of Vienna as an introduction to the unit; this will hopefully get them to think about the important characteristics of Europe and the Ottoman Empire at the time.

To do this, he logs into HistoSynth's Administrator panel and restricts the available sources to those until 1683 (the Battle of Vienna). He then enters the assignment into HistoSynth and gives the students one class period to complete it. Students should research the available sources and write what they think was the outcome of the battle and why, based on the primary sources of the era. (Although the Ottoman Empire was already on the decline, European contemporaries of the time did not realize this and still feared a Turkish invasion.) By this point in the course (about halfway through, by time period), the students are familiar with system and have developed some reading, writing, and analysis skills, so the teacher and the system do not need to provide as much scaffolding in those respects.

Alexandra, a student, logs into the system and sees that an assignment has been posted. She reads the directions and begins working. She clicks the "Explore History" button, which defaults to the "timeline" view. Being a clever and resourceful student, Alexandra first tries to cheat by expanding the timeline of sources beyond 1683. Much to her dismay, yet somewhat expectedly, there are no sources available beyond this point. Ben Franklin appears on the screen and chuckles at her failed attempt. She quickly hides him. Now really getting to work, she begins examining the available sources. She finds one that seems interesting: "Letter from King Jan III Sobieski of the Polish-Lithuanian Commonwealth to John George III, Elector of Saxony", dated August 24, 1683. She clicks on it. This opens up the Source Explorer, where she's able to read the letter (translated into English and typed neatly – she can also view the original document if she's curious). As Alexandra reads the source, she enters some comments and questions about the letter and posts some of them in the discussion area. She also sees what her classmates have posted and is able to gain some new insight about the letter.

She repeats this process for several more sources for about 20 minutes, then begins writing her alternate history. Since this is not an official report, she is not required to use Report Maker and instead decides to hand-write it, because she likes practicing her handwriting. At the end of the period, she turns in her assignment, just a few paragraphs on what she thinks happened, justified by the sources she discovered.

Meanwhile, the teacher continues with the lessons up to the Battle of Vienna. When he finally gets to the battle, he hands the students back their reports. The lesson consists mainly of the students discussing what they think the key factors are and arguing the predictions they made. When the teacher finally reveals the true outcome, he opens up the discussion again as to what weaknesses the Turks had and why the Europeans were able to overcome their differences in defending Vienna. In this way, he can tie in important concepts from earlier in the course, such as religious warfare and internal problems causing empires to decay, or introduce new ones, such as Europe's political and military supremacy from the late 17th century on.

## 8. Evaluation

Ideally, we would like HistoSynth to be an active part of classroom activity for the length of the school year. Since this is our first iteration, we expect the system will have many problems which can be better addressed with shorter periods of exposure. We will develop a launcher unit and block of sources which

correspond to a subset of our goal. This curriculum will be created with one or two specific educational institutions in mind for testing. This small scale, formative evaluation will create an iterative loop. Hopefully, after 3-5 iterations and within two years, we will have shaped the program enough to extend the study to a wider range of students and learning environments. At that point, we will be prepared to evaluate in a summative fashion.

Our focus will be to evaluate the learning goals of reading comprehension, writing skills, and historical synthesis. If effective, our system should show a statistically significant increase in these skills compared with a control group exposed to a typical history training environment. We must evaluate in a typical environment, one where computers may not often be accessible. Finally, we hope to find through qualitative analysis that there is increased interest in the subject of history, as compared to the control group.

#### References

- 1. Collins, Allan, Brown, John S. and Newman, Susan E. "Cognitive Apprenticeship: Teaching the Crafts of Reading, Writing, and Mathematics". *Knowing, learning, and instruction: Essays in honor of Robert Glaser*, 1989. 453-494.
- 2. Anderson, John R., et al. "Cognitive Tutors: Lessons Learned". *The Journal of the Learning Sciences*, 1995. 4(2): 167-207.
- 3. Duff, W., Craig, B., and Cherry, J. "Historians' use of archival sources: Promises and pitfalls of the digital age". *The Public Historian*, 2004. 26(2): 7-22.
- 4. Duff, W.m., and Johnson, C.A. "Accidentally found on purpose: Information-seeking behavior of historians in archives". *The Library Quarterly*, 2002. 72(4): 472-500.
- 5. Edelson, Daniel C., Gordin, Douglas N. and Pea, Roy D. "Addressing the Challenges of Inquiry-Based Learning Through Technology and Curriculum Design". *The Journal of the Learning Sciences*, 1999, 8(3, 4): 391-450.
- 6. Greeno, James G., et al. "The Situativity of Knowing, Learning, and Research". *American Psychologist*, 1998. 53(1): 5-26.
- 7. Greeno, James G., Collins, Allan M. and Resnick, Lauren B. "Cognition and Learning". *The Handbook of Educational Psychology*, 1996. 15-46.
- 8. Kolodner, Janet L., et al. "Problem-Based Learning Meets Case-Based Reasoning in the Middle-School Science Classroom: Putting Learning by Design(tm) Into Practice". *The Journal of the Learning Sciences*, 2003. 12(4): 495-547.
- 9. Schank, Roger C. et al. "The Design of Goal-Based Scenarios". *The Journal of the Learning Sciences*, 1993/1994. 3(4): 305-345.

# **Appendix - Screenshots**



- Source Added: Peter the Great's Travel Diary
- New Assignment: Assignment Name
- New Comment: St. Teresa of Avila's Journal

#### **Timeline View**



#### Map View



# Source Explorer

HistoSynth		St ten fin and	pour pite	mice boe prefibing fant en mice boe prefibing fant en mice boe mifiten Log	g Out
Explore History Reports	Admin				
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Title: Common Sense Author: Thomas Paine Date: 1776 Description: A political treatise from	he American R	evolution arguing against British ru	ule	Source Clipboard • Peter the Great's Travel • The Salt and Iron Debat	Diary es
Of the origin and design of government is Some writers have so confounded society w What does Paine mean by "society"? [go to thread] Society in every state is a blessing, but gove state an intolerable one; for when we suffer might expect in a country without governm means by which we suffer. Government, like built on the ruins of the bowers of paradise built on the ruins of the bowers of paradise	n general, with c ith government, a ut have different notes our happin e one encourages rnment even in it or are exposed to ent, our calamity dress, is the bado For were the imp iver but that not	as to leave little or no distinction betwee origins. Society is produced by our wants less positively by uniting our affections, t intercourse, the other creates distinction s best state is but a necessary evil; in its v o the same miseries by a government, wh is heightened by reflecting that we furni ge of lost innocence; the palaces of kings ulses of conscience clear, uniform, and in boing the care he finds it necessary evil; and in	en s, and the ns. The worst nich we ish the are resist- urren	What other writers may have influenced Paine's views here textbox for answer	e e?
der up a part of his property to furnish mea the same prudence which in every other ca security being the true design and end of g appears most likely to ensure it to us, with t <b>Comments</b> What does Paine mean by "society"? pos What does Paine's society do for people, and Re: What does Paine mean by "soci	ed by <b>student1</b> of how does that re	ion of the rest; and this he is induced to of t of two evils to choose the least. Wheref nswerably follows that whatever form th and greatest benefit, is preferable to all o on 4/27/07 elate/differ from other things written at t student2 on 4/27/07	do by fore, hereof others.	Related Sources • The Declaration of the R Man and Citizen • The Declaration of Independence	lights of

# **Evidence Aggregator**

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urce Aggregator	>	Pre-Writing Wor	ksheet > Report	er		Your Reports
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						• Chinese vs Japanese Imperialism (version 2
What I know	Wha	at I need to know	What I've learned	Evidence	How I'll use it	• Post-Colonialism
						Source Clipboard • Peter the Great's Trav
						Diary • The Salt and Iron Debates

# **Pre-Writing Worksheet**

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The student's thesis goes here.						Imperialism (version 1) (Submitted)		
						• Chinese vs Japanese Imperialism (version 2)		
Main Points:						Post-Colonialism		
1. The first poin	t that support	ts the thesis go	bes here.					
Evidence Source								
Evidence that supports the first point			Select Box	▼				
			[Add another sour	ce]				
[Add more evidence] [Add another main point]						Source Clipboard • Peter the Great's Travel Diary		
What I know Wh	at I need to know	What I've learned	Evidence	How I'll use it		• The Salt and Iron Debates		
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# **Report Maker**

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The introduction shoul have background infor and your thesis Outline Thesis: The student's thesis goes here. • The first point that supports the thesis goes here		Report title: My First HistoSynth Report   Introduction B   I U   I   ation   First Main Point   B I   U		<ul> <li>Chinese vs Japanese Imperialism (version 1) (Submitted)</li> <li>Chinese vs Japanese Imperialism (version 2)</li> <li>Post-Colonialism</li> </ul>	
<ul> <li>Evidence for the first point</li> <li>More Evidence</li> <li>Second point</li> <li>Evidence for the second point</li> </ul>	ond	Second Mai	[Add another paragraph to First Main Point] n Point <b>B</b> [7] [1] [1]	Source Clipboard • Peter the Great's Travel Diary • The Salt and Iron Debates	