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SI 580
Long Paper
12/5/06

Primary Sources and Technology in K-12 Education

In the last ten years, developments in digital and networking technologies have led to a dramatic increase in the ability of teachers and students at all levels to access primary source materials on the Internet. This has been especially true at the elementary and high school levels where access to distantly located, rare, or fragile materials has traditionally been highly restricted. However, while great strides have been made towards increasing access to these materials, efforts to engage technology to improve how they are used have been slower to emerge. This paper discusses the ways that primary resources are used in classrooms and the unique value that they add to K-12 education. It suggests that the two principle ways technology can benefit the use of primary resources in K-12 settings are by improving their availability and by supporting environments where they can be selected, described, annotated, discussed and created collaboratively. Drawing on the analyses of two important projects that were undertaken to integrate primary resources more fully in K-12 curricula, as well as current technologies and examples from the World Wide Web, it proposes a model website for such an environment. As more and more resources have become available on the internet, the question surrounding their usage is no longer *if* they can be used but *how*. Technology is well placed to enhance the distinctive value that primary sources add to K-12 education, and one of the most powerful ways it can do this is by creating dynamic environments that enable their collaborative use.

The Value of Primary Resources: How and Why They Are Used

While the use of primary source materials in the past was largely restricted to short excerpts in the margins of textbooks, photocopies distributed in class, or short excerpts read aloud by teachers, educators and students today have unprecedented access to primary materials of all kinds. These include traditional textual documents as well as digital sound files, video clips, and high resolution photographs.

There is also an unprecedented system of support for teachers seeking to incorporate the use of primary sources materials into their curricula. Websites such as the Library of Congress, the National Archives and Records Administration, LessonPlanet, Whyy, Proteacher, and many others contain an incredible number of resources such as lesson plans, worksheets, sample questions, and even video programs about how to teach with primary sources.[1]

In this section of the paper I identify some of the key reasons primary sources are used in K-12 education and issues that their increasingly everyday presence in classrooms has raised for the study of history. This will provide background for a discussion of the ways that technology can benefit their use in this setting. Primary sources are used:

To engage students in historical inquiry

[1] See Learner.org <http://www.learner.org/resources/series166.html> for videos on using primary sources and other teaching practices.

"Primary sources fascinate students because they are real and they are personal."[2] Using primary documents in classroom exercises can help engage students in historical studies. As teacher Monica Edinger states, "Letters, diaries, household tools, and maps function as time machines, carrying students back to long-ago eras. When these voices, images, and artifacts of the past are before them, children have an easier time imagining faraway times and people as real."[3] First-hand accounts offers students more meaningful insight into the thoughts and feelings of individuals in the past than secondary sources often provide, humanizing history and allowing students to touch the lives of individual people.[4]

To motivate inquiry

In his article, "Engines of Inquiry: Teaching, Technology, and Learner-Centered Approaches to Culture and History," English professor Randy Bass asserts that "it is the compelling questions that motivate expert learning; similarly it is in those moments when students are driven by questions that are compelling (or interesting) to them that they learn best."[5] Keith Barton, who has written extensively on elementary history education, draws parallels between introducing an unusual or thought-provoking historical

[2] "History in the Raw" <http://www.archives.gov/education/history-in-the-raw.html>
[3] Edinger, Monica. "Time Travel with Primary Sources: Using authentic documents and artifacts will make history and literature burst with life for your students.(sample lesson for Thanksgiving)." Instructor (1990) 111.4 (Nov-Dec 2001): 18(3). General Reference Center Gold. Thomson Gale. University of Michigan - Ann Arbor. 17 Nov. 2006. Web-version not paginated
[4] "History in the Raw"
[5] Bass, Randy. "Engines of Inquiry: Teaching, Technology, and Learner-Centered Approaches to Culture and History," Engines of Inquiry: A Practical Guide for Using Technology to Teach American Culture, American Crossroads Project, 1997. Web-version unpaginated

document in a classroom and the use of physical demonstrations in science classes to pique the interest of students. Activities such as these push the limits of students' existing mental frameworks. As they strive for understanding, they often begin to ask questions of their own, which can motivate further inquiry and study.[6]

To develop analytical and critical thinking skills

Primary sources provide evidence for historical accounts.[7] Comparing evidence from a variety of sources helps students understand the subjective nature of historical evidence and appreciate the personal, social, political, and economic biases inherent in the creation of historical documents and in their own interpretations of them.[8] This develops critical thinking skills and enables students to engage meaningfully in debates about historical issues. An understanding of the way historical evidence is created and used also provides a basis for evaluating and interpreting contemporary sources of information such as newspapers, radio programs, television and advertising.[9]

To teach research skills

Historically, two of the major barriers to the use of primary sources in K-12 education have been lacks in physical and intellectual accessibility. As barriers to physical access decrease, concerns over the value of using primary materials, particularly in lower grades,

[6] Barton, 2005, web-version not paginated
[7] Barton, 2005, web-version not paginated
[8] "History in the Raw"
[9] "History in the Raw"

have remained. Several innovative uses of primary documents for younger children have emerged, however, and are being used more widely. These involve using "contextualized," and "scaffolded"[10] activities, those that reduce broad activities into constituent parts yet provide a sense of the context of the framework in which the activities are being undertaken. Because this use is more complex, and is an area in which the use of technology can have a significant benefit, it is useful to give a couple of examples.

One example is presented in a study conducted by Anne Gilliland and Yasmin Kafai, published as "The Use of Primary Source Materials in Elementary Science Classrooms."[11] In this study, students did field studies in a nearby wetland area and created their own "primary" materials by taking photographs and describing them. Students analyzed their results and compared them to the archived field notes and observations of a naturalist, Donald R. Dickey, who conducted studies in the same area between 1908 and 1923. Through these activities, they were able to understand the studies they performed in their greater historical context, and at the same time learn important research skills.

Another example, from the social sciences, is Monica Edinger's use of annotation with her 4th-grade students.[12] Edinger describes how she uses annotation techniques to help translate portions of journal excerpts from 1622 into modern English. "[B]ecause there was no standard spelling in 1622, the same word could be, and was often, spelled several different ways on the same page (e.g., Plimoth, Plymoth, and Plymouth).

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[10] Gilliland-Swetland, Anne J., Yasmin B. Kafai. "The Use of Historical Materials in Elementary Science Classrooms." (2000), pp.364-365. This study will be discussed in more detail below.
[11] Gilliland-Swetland, Kafai, 2000.
[12] Edinger, 2001 web-version not paginated

Punctuation was used far less than it is today. To top it off, there were many different styles of handwriting and type which can make reading original manuscripts quite difficult." Edinger first demonstrates how annotation on these documents might be done, such as highlighting 'Iournal' in the text and writing "Journal" in the margin. After several examples, students work individually or in groups to finish annotating. "I want to teach the kids techniques-such as annotation-to help them read this challenging material," she says, "These are techniques that they also will be able to use repeatedly in the future. I also want to develop their research skills as they move beyond the journal excerpt to learn more."[13]

For all of these reasons and the ways they enhance learning, most teachers and educators have been excited about the increased availability of primary source materials. Others, however, such as Keith Barton who was quoted above, have been more cautious. His article, "Primary Sources in History: Breaking Through the Myths," is an extended discussion of the common ways that primary sources are *misused* in the teaching of history. At a time when "using primary sources in history classes is all the rage,"[14] Barton points out that the use of primary documents does not necessary equate with the study of history. More specifically, he lays out seven commonly held myths about the use of primary source materials. Three of these are particularly relevant to this paper: 1) Using primary sources engages students in authentic historical inquiry; 2) Students can

[13] Edinger, web-version not paginated
[14] Barton, 2005, web-version not paginated

build up an understanding of the past through primary sources and 3) Primary sources are fun.[15]

The first, Barton asserts, stems from a misunderstanding of how historians use primary resources. "They are not primarily concerned with "sourcing" them, corroborating them, or explaining their meaning."[16] Barton explains that activities, common in history teaching assignments, where students are given a source or variety of sources and asked to explain their meaning or build an argument based on the documents, are artificial and do not relate to authentic historical inquiry. Historians work with evidence. They ask questions and seek evidence to help answer those questions. And they select the evidence themselves.[17] For authentic historical inquiry to occur, students need the ability to develop questions and seek their own sources of evidence to answer them.

What Barton highlights by exposing the second myth, that students can gain an understanding of the past through primary sources, is that history is not composed solely of individual documents that can be analyzed and interpreted on their own. "How many thousands of sources would students have to consult to develop an understanding of the Industrial Revolution, or the history of women's rights, or the reasons for the Vietnam War?" he asks.[18] History needs context. Whether it is gained through textbooks, lectures, or a website, students need to understand the context in which documents were produced in order to be able to make sense of them.

[15] Barton, 2005, web-version not paginated
[16] Barton, 2005, web-version not paginated
[17] Barton, 2005, web-version not paginated
[18] Barton, 2005, web-version not paginated

With the third myth, that primary sources are fun, Barton cautions against isolated activities where students are asked to extract information from or analyze sources "for sourcework's sake[19]" without relation to class or historical context. This is related to the first myth, but has a different emphasis. Barton stresses that primary sources "are not inherently interesting, and students do not always enjoy working with them."[20] He criticizes lessons plans for primary sources available through commercial or governmental sites (such as NARA or the Library of Congress) for their tendency to emphasize repeated and mechanistic approaches. "Too often," he states, "students are simply presented with a document-- one that may have no connection to their prior knowledge, experience, or interests -- and asked to identify when it was written, by whom, and for what purpose. In exercises like these, the ability of primary sources to raise questions, inspire wonder, and provide evidence is lost, and students may find themselves completing boring and irrelevant tasks that transform their initial interest in history into active avoidance and dislike."[21]

Primary sources are used in K-12 education for many reasons including their ability to engage students and provide insight into the lives of people of the past, to stimulate curiosity and motivate inquiry, to develop analytic and critical thinking skills in students, to teach research skills and to provide historical context in areas such as science where the study of history may not be the primary goal. Primary sources are important tools for historical inquiry, but they are not the only tools. If authentic historical inquiry is to take place, students must have the ability to formulate questions and seek their own sources of evidence. Care must be taken in this process to preserve the context of the

[19] Barton, 2005 web-version not paginated
[20] Barton, 2005, web-version not paginated
[21] Barton, 2005, web-version not paginated

materials being studied and to avoid studying them for their own sake. Otherwise, they may lose their power to inspire wonder and stimulate students to inquire about the past and learn more about the world we live in.[22]

These points are important to consider as we move into a discussion of the ways that technology can benefit learning with primary resources. For it to be beneficial, any technology that is introduced must preserve, enhance, and address the unique values and issues that using primary documents bring to classrooms.

The Value of Technology for the Use of Primary Resources

There are two main ways that technology can benefit learning with primary resources: by providing access to a broader range of materials than would otherwise be available, and by allowing people, resources, and ideas to connect and interact in creative ways. How do these two areas relate to the unique qualities that primary resources bring to the classroom? Greater access to primary resources increases the ability of teachers to use these sources to engage students and motivate inquiry. Furthermore, broadening the scope of opinions, interpretations, and evidence students have to compare and draw from increases their ability to think critically about documents and engage in authentic historical inquiry.

Environments where students are able to create, edit, and analyze primary resources help them develop important documentary and analytic skills while learning the social and historical context in which those skills are used. When contributed collaboratively, the knowledge gained in these activities, in the form of annotations,

[22] Barton, 2005, web-version not paginated

descriptions, comments, and sources themselves, builds to the base of common knowledge in the educational community and can be referred to and reused by others in the future. In addition, Randy Bass has argued that the real power of primary sources on the World Wide Web does not come from the ability to access them, but from "the connections that can be made across them and the visibility of the process of work being done on them."[23] Technology provides the opportunity for groups of students, groups of teachers, groups of schools, not only to access more and diverse primary sources, but to create, describe, and dialogue about them in ways that create connections and context for others. The creation of collaborative environments is the area where technology can perhaps have the greatest impact on learning with primary source materials.

In this section I will draw on two important projects that were done in recent years to show the developments and issues surrounding both access to, and collaborative engagement with, primary resources that technology has enabled. In the final section I draw together the unique value primary sources add to education and the issues surrounding their access and collaborative use, to propose a model environment for using and sharing knowledge and ideas about primary documents.

Access

The internet itself, by any reckoning, has been the largest and most influential innovation for distributing information of recent years. It allows users to access information of all kinds from all over the world almost instantaneously. Since its

[23] Bass, Randy. "Can American Studies find a Whole in the Net?" American Studies in Scandinavia (Fall 1996) (Odense University Press).

introduction, and the development of the World Wide Web, efforts for improving access have focused on ways of finding information relevant to users' needs. In the world of primary source materials and K-12 education, this has involved two factors: selection of the materials institutions such as libraries, museums, and archives make available online, and the development of descriptive metadata standards for digitized and non-digitized materials that meet the needs of teachers, students, and collaborating institutions.

The first, choosing what should be made available online, can be quite difficult as the Digital Cultural Heritage Community Project, conducted over an 18-month period in 1999, demonstrates.[24] The goal of the project was to design a model collaborative environment for the digitization and integration of materials from museums, libraries and archives into elementary school. One component of the process was for curators, librarians, and archivists to select materials from their collections for digitization based on the Illinois State Board of Education Learning Standards for Social Science and suggested curriculum units submitted by the teachers. Several difficulties were encountered.

One was that Illinois' learning requirements were sufficiently broad that it was very difficult for curators, etc. to determine if institutional holdings, which were of a very local nature in some cases, actually met the requirements. Another was confusion resulting from teachers' lack of knowledge about the collections the institutions held, and how they might be useful. In the end, institutional representatives suggested materials to teachers that they thought might be useful, even though teachers may not have requested

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[24] Bennett, N.A., Jones, T. (2001). Building a Web-based Collaborative Database—Does it work? Proceedings, Museums and the Web 2001, Seattle, WA.

them. A final problem was that materials selected for digitization did not necessarily correspond with exhibit development at the institutions, leading to inefficient use of time and resources. Though the project in the end was a success and did provide a model for collaboration in digitizing and providing access to primary source materials, these difficulties in material-selection illustrate the lack of knowledge and coordination that can inhibit efforts to make useful materials available to teachers and students.

The development of standards for descriptive metadata of digitized materials has been a gradual, but very powerful process. Standards for metadata have allowed webcrawlers such as those used in the Open Archives Initiative to aggregate or "harvest" metadata from library, archive, and museum collections around the world onto web servers separate from the original collections. The information on these servers can then be searched, displayed, and used to locate and access materials. New harvesting techniques enable the collection not only of metadata, but of individual digital objects themselves.[25] The current limitations on harvesting abilities lie more in the kind and detail of descriptive metadata provided by participating institutions, than the capacity of harvesters to extract encoded data. The collections of institutions, or portions of them, that do not ascribe to common standards (Dublin Core is the standard for OAI) are not accessible at all.

One issue surrounding metadata use and creation that relates specifically to K-12 education is the need for metadata used to describe digital objects to be simple enough for students to create and read, yet complex enough to easily integrate the variety of

[25] See the University of Michigan's OAIster project homepage for an example <http://oaister.umdl.umich.edu/o/oaister/>

formats used by participating institutions.[26] Though it was a case study and not indicative of common practice, the study by Gilliand-Swetland and Kafai that was mentioned earlier and will be discussed below, illustrates this need well. It is important to note that this study was part of a pilot project called the Digital Portfolio Archives project. Several articles have been published regarding different aspects of this project, and it will be used again as an example when I discuss primary sources and collaboration later in this section.

In Gilliland-Swetland and Kafai's study, students were asked to create descriptive metadata relating to the pictures they took during field studies. The descriptors used were mapped to Dublin Core elements and included the picture number, date, source (place where the picture was taken), author(s) (who took the picture and who helped), relation to other pictures (what other pictures relate to this one), subject category (plant/animal/landscape/other), title, and picture (a description of the picture) as well as an annotator element that asked students to describe why they took the picture.[27]

Gilliland-Swetland and Kafai found that while students performed well at accurately filling in the picture number, date, author, subject and title, several other descriptors such as source, relationship to other pictures, picture, and the annotator element were left either incomplete or blank. They suggest that this difficulty may have been a result of having to supply this information themselves rather than choosing from a list of choices, and a lack of experience working with primary documents. Students also had difficulty distinguishing between related, but distinct descriptors such as title, subject,

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[26] Gilliland-Swetland, Anne, Yasmin B. Kafai, and William E. Landis, "Application of Dublin Core Metadata in the Description of Digital Primary Sources in Elementary School Classrooms." JASIS, January, 2000, Vol. 52 no. 1, p. 196.

[27] Gilliland-Swetland, Kafai, p.354 (this element was an extension of the Dublin Core standard, and not part of its core.)

and description or providing the progressively detailed layers of description these elements imply.[28] Gilliland-Swetland and Kafai's study showed the effectiveness and feasibility of introducing elementary students to complex scientific inquiry through creating and analyzing primary sources.[29] However, the accessibility of metadata standards to students will be a concern in future initiatives.

Metadata concerns also arose in the DCHC project; not on the side of creation, but of use. When considering standards for the metadata, it was necessary that the standard provide a level of complexity on a par with institutions' current description standards, yet be accessible to both teachers and students. A number of options were considered, but Dublin Core was ultimately selected because of its ease of use and adaptability. Another concern surrounding metadata for the project was the degree of interpretation that would be included in the descriptions of artifacts. Libraries and museums traditionally have very different takes on the importance of interpretation in the description of collections, with libraries focusing much more on objective access to information.[30] Teachers, however, deemed the interpretation included in the final descriptions to be extremely important for putting items in their historical context, especially since many of them did not have the time or resources to research the materials themselves.[31] Although time constraints were also identified on the side of those writing and creating the interpretations and only "thin" interpretations were included in the DCHC project, "It was widely agreed by curators, librarians and teachers that the interpretive and descriptive information was critical to the success of teachers and

[28] Gilliland-Swetland, Kafai, p.365
[29] Gilliland-Swetland, Kafai, 2000 pp.363-364
[30] Nuala A. Bennett and Trevor Jones, (2001). Building a Web-based Collaborative Database—Does it work? Proceedings, Museums and the Web 2001, Seattle, WA
[31] Bennett and Trevor, 2001, web-version not paginated

students in forming the correct (historical and factual) interpretation of the use and context of primary source materials."[32]

These scenarios illustrate the complex issues involved in providing access to primary source materials. Gaps in knowledge between institutions that own these materials and teachers who wish to use them, as well as philosophical differences between institutions themselves, can make collaboration difficult and work-intensive. Care must be taken not only in selection processes, but in the way materials are described as well. Metadata schemes must be simple enough to be used by teachers and students, flexible enough to incorporate the variety of descriptive structures used by diverse institutions, and provide enough interpretive information that they can be understood in the appropriate context.

Collaboration

Though the presence of collaborative environments online has grown in recent years, they remain a relatively new phenomenon, especially in the area of K-12 education. Gilliland, Kafai, and Landis mention four collaborative projects that were undertaken in the middle 1990s in science education.[33] As the authors also relate, however, none of these projects included or sought to incorporate the use of primary source materials. The best example I have found that combines collaborative elements with technological innovation to improve the use of primary documents in K-12 education is the Digital Portfolio Archives project.

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[32] Bennett and Trevor, 2001, web-version not paginated
[33] Gilliland-Swetland, Kafai, and Landis, 2000 p.195

The Digital Archives Project was conceived in 1996 and provided the technological infrastructure that was used by Gilliland-Swetland and Kafai to conduct the study with elementary science students, that has been talked about above. The formation of this infrastructure, and the issues it was meant to address, illustrate the ways that technology can benefit the ability of students to create and share knowledge in collaborative ways. Though there is some overlap with the preceding discussion of metadata, the project is worth discussing in more detail.

The developers of the project recognized the increased demands of science educators for access to primary materials in order to integrate a wider social and historical context into the curricula of their students. They also recognized three issues involved in digitization that have been touched on in the above paragraphs: 1) teachers recognize the value of using primary sources but are unsure of how to assess the quality and reliability of content on the internet; 2) content holders such as museums and archives "need to understand better how to prioritize their collections for digitization, and the most effective means for describing and visually representing digital versions of primary content for use by teachers and students"; and 3) those developing digital libraries "need to understand better the design and process issues associated with digitizing, storing, and retrieving contextualized and authenticated primary content."[34]

The project aimed to develop a process for institutions to select and digitize materials, for teachers to build personal portfolios (Digital Portfolio Archives, DPAs) from those materials, and for students to incorporate components of the teacher's portfolio into their own DPAs. These components could then be edited and used in class-related projects, and optionally incorporated back into the original digital library as a

[34] Gilliland-Swetland, Kafai, Maddox, 1998, web-version not paginated

layer of user-created content distinguished by provenance.[35] One further interesting component of the project was that it allowed for both teachers and students to digitize their own materials for inclusion in portfolios.

The decision-making process for the selection of materials to be digitized differed from that of the DCHC project in that learning standards and teacher suggestions did not come into play. Instead, curators of the collections of participating institutions (all at UCLA) compiled a range of materials that met specific criteria: they had to "(a) relate to the natural or health sciences, as broadly defined; (b) fall outside current copyright restrictions, or where copyright is held by UCLA; (c) [be] in sufficiently good physical condition that they [can] be digitized without sustaining damage; (d) represent relatively small, qualitatively dense, and self-contained collections of materials, or comprise individual items of exemplary value; and (e) [not be] subject to confidentiality restrictions."[36]

A key component of the project was for teachers and students to document their selection processes by annotating finding aids (created by institutions using Encoded Archival Description) of selected items.[37] Teachers were to record information about why items were chosen, what they hoped to find from analyzing them, and how they expected to use the items in the classroom. Students would include annotations indicating why materials were chosen, and a diary in the portfolio describing the resources included in their portfolio/project. This information, in conjunction with the

[35] Gilliland-Swetland, Kafai, Maddox, 1998 web-version not paginated
[36] Gilliland-Swetland, Kafai, Maddox, 1998 web-version not paginated
[37] Finding aids of cooperating institutions were encoded using EAD. Dublin Core was used for annotations added by teachers and students, however. Dublin Core was chosen because "it provided a systematic yet minimal way for lay creators, in this case elementary school students, to describe their own resources in a way that could later be integrated with EAD."
Gilliland-Swetland, Kafai, Landis, 2000, p. 196.

feedback element of the project that enabled used and modified materials to be reincorporated into the prototype collection, would be used as evaluation tools. They would inform content providers about the "use, usability, and relevance" of the materials they digitized.[38]

This is an extremely important idea. As the project-writers say:

> "With this approach, aspects of information science-related work such as providing annotations and descriptions is made an essential part of the learning and teaching process. In fact, categorizing and describing are part of many elementary classroom activities, they are just not placed with a larger context of creating digital portfolios which are both personal and able to be shared beyond the parameters of the classroom. In other words, what we are proposing is a systematic approach that connects systems designers, content holders, and content users and informs each group about the needs of the other."[39]

In addition to engaging questions of metadata creation and accessibility, the Digital Portfolio Archives came up with an innovative process for the selection and digitization of materials to be used in K-12 classrooms. This was done by including contextual information in resource descriptions (why materials were chosen) and sharing content beyond the confines of the classroom in a public portfolio, with the goal of increasing understanding between all players involved in the process – students, teachers, and content providers. The DPA harnessed the powers of access that technology offers to begin to develop its next level of usefulness – the ability to create connections and context between groups and encourage collaboration that benefits everyone.

The potential of technology to make such collaboration possible in the K-12 setting with specific regard to primary source materials is still only beginning to be explored. As I have demonstrated through a discussion of the importance of primary

[38] Gilliland-Swetland, 1998 web-version not paginated
[39] Gilliland-Swetland, 1998 web-version not paginated

sources for historical inquiry and the value they add to a variety of class activities, however, it is important that it be developed.

In the final section, taking a nuts and bolts approach to the issues raised in this paper concerning material selection and use, metadata accessibility, and collaborative knowledge sharing, I identify the specific qualities and functionalities that an environment for collaborative learning with primary resources in K-12 education should have. Then, drawing on current technologies and examples from websites that have emerged on the internet, I suggest a model for what such an environment might look like.[40]

The Collaborative Environment

Based on the preceding discussion, an ideal collaborative environment for primary source use in K-12 education should meet several specifications:

It should allow metadata for primary source materials, and digitized primary materials themselves, from a broad range of institutions to be selected and saved into personal collections that can be returned to and referenced without having to search for items again.

It should address copyright concerns associated with these materials and their distribution.

It should be possible to easily annotate the metadata for selected materials, and the metadata should be sufficiently complex to incorporate diverse collections in multiple

[40] See Appendix B for mock screen shots of the site with descriptions of each page and the functions on it.

media formats and yet simple enough to be read, edited, and annotated by elementary students.

It should allow for outside resources that explain, interpret, or otherwise provide meaningful context in which primary materials can be understood, to be easily cited and accessed. This might be in the form of links to websites, books, or specific sections of books, as the Google Book Project now underway is making possible.

It should allow for new objects to be added to those personal collections, and involve a cycle of information flow whereby new materials and aggregated collections can be incorporated into the collective whole.

Finally, by doing all of these, it should increase the ability of users to make connections between resources, ideas, and each other.

Metadata, Digital Objects, and Collections

The application of Metadata harvesting technology is vital to building this environment, and is useful because it addresses several of the issues regarding material selection that we have encountered. In order for metadata to be harvested, collection and item descriptions at participating institutions must be encoded in the Dublin Core standard of metadata description. This allows web crawlers, such as those maintained at the University of Illinois and the University of Michigan, to aggregate the metadata into large databases, from which the information can be searched, extracted and displayed. Dublin Core is ideal for this because although it is a relatively simple standard, it can be expanded to allow for more complex description. Thus, it is easy to integrate with the

diverse collections and cataloging practices of institutions such as libraries, museums, and archives.

In addition, the use of metadata harvesters can reduce, or eliminate altogether complex negotiations between teachers and institutions about what materials should be selected for digitization. Teachers are able to select for themselves, from broad range of materials, those that help them best meet state and national learning standards, as well as their own uses. At a higher level, of course, debates will go on about the kinds of materials that are most beneficial, or the ones that are the highest priorities to digitize. At the present time, however, there is a solid enough base of material available so that the element of teacher choice, and student as well, is significant. Whether it is large enough to support Barton's definition of authentic historical inquiry is another question, and will be addressed below, but it is certainly a start. How extensive is that base?

There are a number of metadata harvesters and tools in existence. OAIster is one, and is hosted by the University of Michigan. It cannot be strictly called a harvester, but it is a service for retrieving information that runs off of a metadata harvester at the University of Illinois.[41] OAIster currently serves 9,781,605 records from 706 institutions[42] and it is a good example for this paper because it restricts the metadata it collects to materials that are publicly accessible and link to an object or resource that is available on the internet.[43] This means that when search is performed for a picture of Abraham Lincoln, for example, OAIster uploads metadata for pictures from contributing institutions, as well as links to those pictures on the sites of the institutions. Screen shots of such a search are provided in the appendix. OAIster has a variety of advanced search

[41] <http://bibt10f-8.fcla.edu/o/oaister/description.html>
[42] See website for up-to-date information.
[43] < http://bibt10f-8.fcla.edu/o/oaister/description.html>

options that facilitate retrieval, and an additional virtual "bookbag" for saved search results that functions much like the "My Shelf" option available now on many library websites.

This bookbag function is an important feature of the OAIster site, and an essential part of the web site we are creating. As Keith Barton reminded us at the beginning of this paper, history is not made of individual documents that exist in isolation. Putting an item into a collection makes it more than just one of 9 million records out in hyperspace. It makes it belong to something and gives it context. It may not be historical context – that will be discussed below – but it gives the items meaning, and meaning is what helps to develop connections between items and between people.

Privacy and Copyright

Privacy and Copyright concerns would be handled in a number of ways. First, it is up to institutions to choose which of their collections, if any, are open to metadata harvesters. If they do not wish to make materials publicly available, they can simply not participate.[44] Second, access to certain collections and areas would be restricted with password protections. In order for anyone to be able to search and develop collections on the site, a general username and password would need to be created. After that, users would have the opportunity to create a personal profile and select settings for their collection including whether it is made public to all visitors of the site, or private. Teachers could employ profile and privacy restriction abilities on a broader scale to

[44] ArchiveGrid is a good example of this. ArchiveGrid is a database of collection descriptions submitted by "thousands" of institutions and is only available by subscription.

create profiles for classes and provide access to all students in the class through a common password. Systems for course reserves and class information sharing, such as Blackboard and CTools that are already used in university settings function in much the same way.

For collections that are made public, access to them could be achieved by other users in a variety of ways. Many of the ones I introduce here are taken from the website LibraryThing.[45] When a collection is made public, its standard metadata, as well as personalized subject tags and annotations would be searchable by all users in a common database. A function would also exist that allowed a user creating a collection to see all of the collections that have the same item(s) that he or she does. This would enable teachers or students to see how often the materials they are using are used by others, and link directly to those collections to view and browse their holdings.

Annotation, Original Documents, and Life Cycle

Metadata harvesters do not allow for annotations or comments to be added to their retrieved metadata. In order to do this, it would be necessary to link to the API of a metadata harvester from a second site (the one we are creating) and search the harvester through a different interface. If metadata is pulled from the harvester and displayed on an independent website, fields for comments, subject tagging and annotation can easily be

[45] www.librarything.com Some of these features may not be good for use in elementary or high-school because they could distract from the research or other work that is being done, or lead to legal concerns. I mention them here, though, as possibilities for what could be done. The features could be turned on or off by teachers or students when collections are created.

added. An example of this, and a sophisticated example of the "book bag" function mentioned above are found on the website LibraryThing.

The ability to edit and annotate individual records of items includes the ability to add hyperlinks and other citation information as well. In this way, items drawn from metadata harvesting could be linked to resources on the internet (such as Google Books, as mentioned above) or in local network of schools, to provide valuable secondary information. Additionally, there is a public protocol through which libraries across the U.S. connect their collections to the main OCLC union catalog. If our site supported a connection to this protocol, as is done by other sites such as LibraryThing, it would be possible to extract full MARC cataloging records for books searched in libraries such as the Library of Congress or the University of Michigan. Thus, bibliographic resources surrounding a primary document, or collection of primary documents could be assembled in the same space with the documents themselves. An export feature into bibliographic software such as RefWorks would provide an instant bibliography.

Uploading personal images, documents, etc. onto the site would also not be a difficult feature to add. Many commercial sites, such as Shutterfly and Walgreens allow users to upload photographs. This functionality on CTools at the University of Michigan is a more academic example. The key would be to allow the creation of metadata at the time of uploading in order to incorporate the new object into the collection.

One of the main problems of metadata use in the DCHC and DPA projects was its accessibility for younger elementary school students, both in creating and reading. To deal with this, the site could allow teachers to choose the field categories into which metadata would be entered. This could be done by setting defaults for those fields when

creating a new collection. The fields would be chosen with the appropriate grade-level in mind.

In terms of integrating these materials back into an original collection, since the website draws from materials housed in many areas around the country and world, the only original "collection" is the totality of searchable records available through harvesting. While originally contributed materials could be re-encoded to match Dublin Core standards (if they do not already, which may be the case with younger students) and thus be made harvestable, they are just as available to anyone who might want to use them, and probably more so, in a collection.

This is an important point because one of the most powerful features of the site is its ability to connect users, both teachers and students, with materials they would not otherwise know about or use. Collections can be made private, but they can also be made public, allowing anyone on the site to view what is in them including comments, annotations, subject tags, and links. One of the issues raised in the discussion above was that teachers do not have the time to research and provide proper context for many primary source materials that might be used in classes. Teachers and institutions (museums in particular) both agreed that interpretations were extremely important, even critical, for proper interpretation of artifacts. Through this site, teachers can view the materials other teachers are using for their classes. They can rely on supplementary descriptions and annotations created by others to contextualize those materials and develop ideas about how use them in creative ways.

Benefits, Limitations and Future Work

One of the best features of this site is that can be built entirely on existing infrastructure and technology. It does not involve new innovation or complex system design beyond what is already being done, and it is supported by interaction that is beneficial to both its users and content providers. The quality of the collections available would depend on the collection development of participating institutions. Increased availability, not just of digital objects, but of metadata as well without objects, could increase usage of traditionally underused institutions by providing an additional outlet for collections to be seen, discussed, and used. Increased usage could increase funding and be an incentive for more institutions to make their collections available. An added benefit is that content providers would be able to observe how and which of their collections are being used, making it possible to set digitization priorities and plan for coordination between digitization projects and exhibit development.

Once implemented, the site would require a certain amount of maintenance, but almost no additional investment since it merely harvests what has already been made available. It would provide free access to a broad base of materials from around the world that teachers and students could draw upon and use. One of the limitations inherent in this, however, is that there is a lot of content that is not available free of charge that would not be accessible. This is definitely a concern, especially for Barton's definition of authentic historical inquiry. Students would be able to choose the evidence they used to answer important questions, but the evidence would not be complete. The issue, of course, is if that evidence can ever be complete, but the restriction on access to materials is certainly significant. The only reply that can be made is that some (and

significant) access to primary resources is better than what is currently available in many schools, and it is certainly sufficient for the tools that this website would provide to enhance their use.

Future work involves first that the website be implemented and its usage studied and evaluated. Are teachers using it? Are students? This website is only meant to lay the groundwork, however. Many new possibilities have arisen, and initiatives undertaken to improve the visualization of web pages and the information they contain. Gaming technologies already make extensive use of 3-D spaces and distributed, collaborative efforts to improve game play. Applying some of these technologies to web design with primary resources could create virtual classrooms where teachers would be able to do such things as use digital objects to furnish classrooms and conduct lesson by leading students on a walking tour of the items. Better still, a whole environment could be created, such as early Philadelphia, that students could move through and find documents and evidence about as they went.

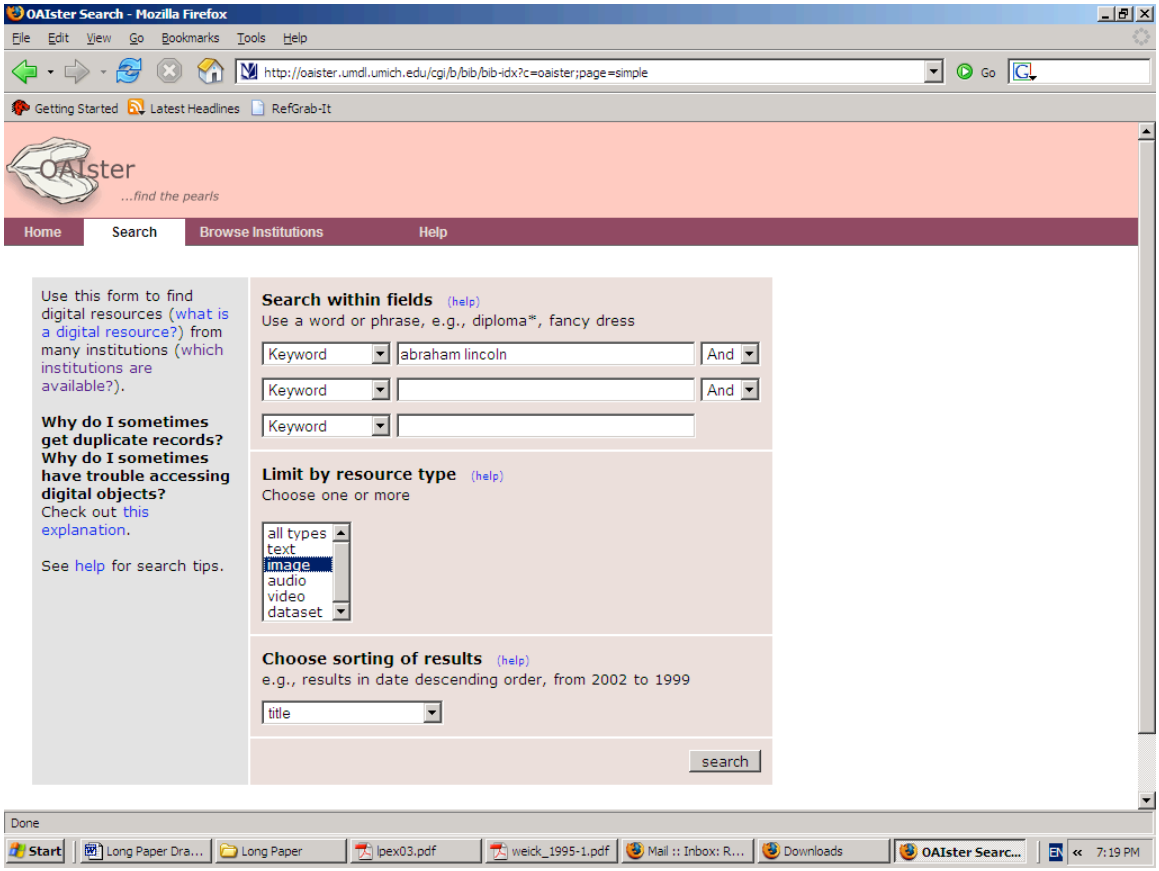
The idea, at least on my part, is to create an environment that children, teenagers, college students, adults, can "play." A place where the search for primary documents takes you to France or ancient Rome to solve a mystery – but a real mystery where other players are involved who have valuable information that can either help you or set you on the wrong course: a true "reality" game where what is at stake is not bragging rights or making it past level 9, but an understanding of how the world came to be the way it is and how we can make it a better place.

Conclusion

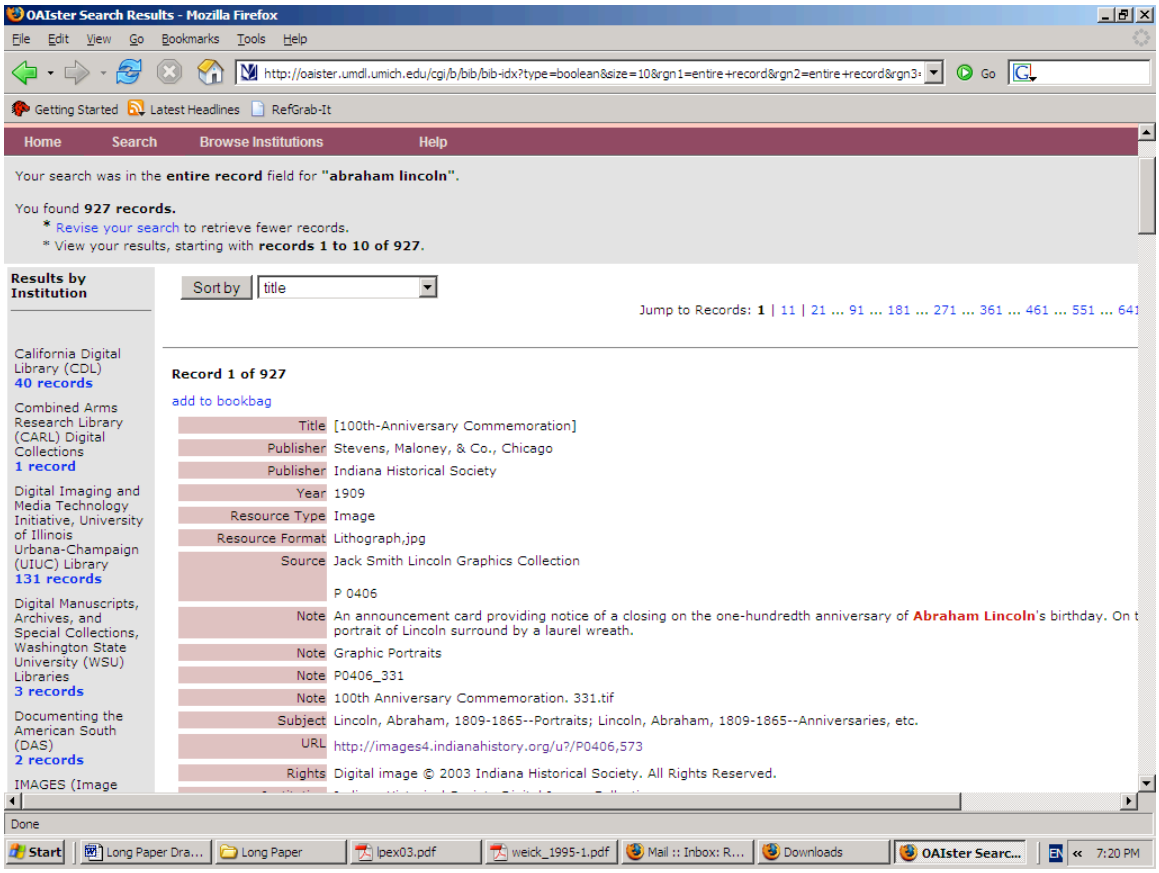
In the view from above, the Web of today's primary source materials resembles a large group of disconnected dots, some larger than others, but all separate from one another. Websites of individuals and corporations have popped up here and there offering services and digital content. Institutions have collaborated on large initiatives and projects to make their collections accessible online. In this paper, I have sought to connect the dots in one community of interest – K-12 education. Primary source materials are valuable to primary and secondary teachers and students for their ability to engage, raise questions, provide insight, and teach valuable analytic and research skills. The technology boom of recent years has vastly increased the availability of these materials, but we are only beginning to realize the potential of the internet in the area where it can have the most impact: connecting groups of people, ideas, and groups of people with ideas. Much of what is needed to take the next step in these endeavors is already available in terms of technology and institutional initiatives. The resources are only waiting to be harvested and combined in creative ways. I have attempted to apply new technologies and capabilities of the present to innovative efforts of the past and present an example of how a collaborative environment surrounding the use of primary source materials might work in today's web, and what it might be capable of. Work in this area is still in its beginning stages, and much innovation and creative energy must still be applied if we are to realize the full potential of technology for using and learning with these valuable resources.

Appendix A: Screen shots of OAIster search for Abraham Lincoln pictures

1. Search page

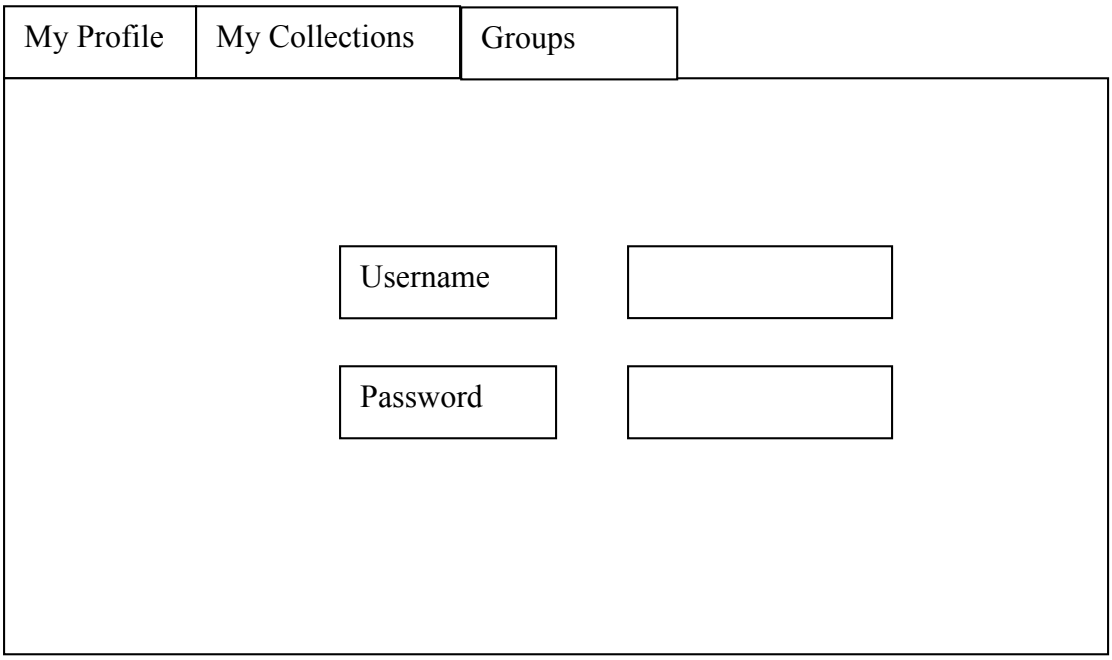


2. Search results

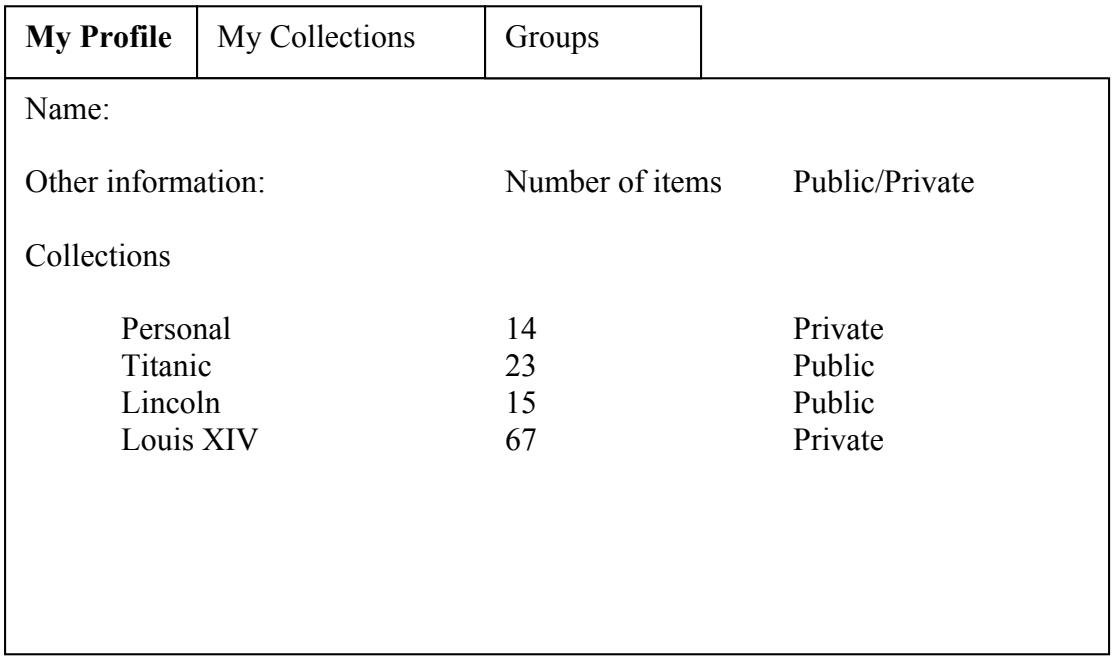


Appendix B: Sample website

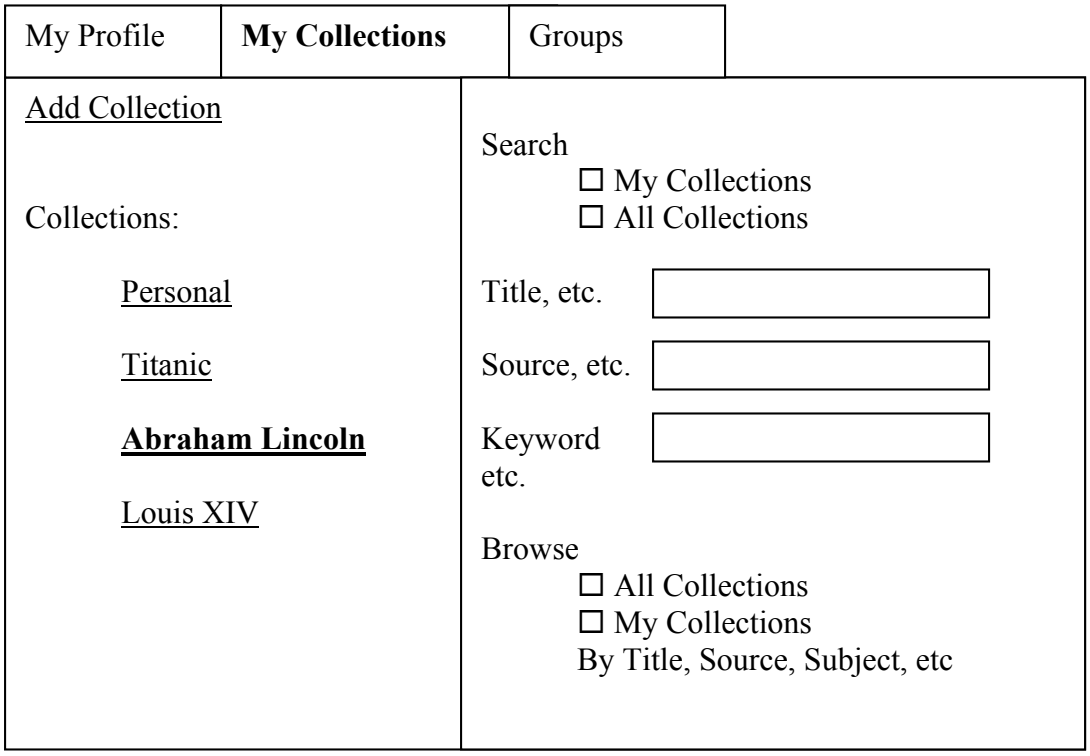
1. Users create username and password



2. My Profile - Users create a profile, consisting of name and other information that might be useful (to be added). Collections that have been created are displayed.



3. My Collections – Users create collections from which searched items will be saved and edited. From here they are also able to search information of public collections on the site.



4. My Collections – Add Collection – Users make specifications for the collections they add including whether it is public or private, and if there will be discussion allowed on the collection site. Access to certain members can be allowed either by sharing the password with them, or specifying who will be allowed. In the latter case, other members would log in with their own password, but have access to view this collection. Creators of collections could also choose, if the collection is to be viewable publicly, if it could also be edited publicly.

My Profile	**My Collections**	Groups

ADD COLLECTION

Title: 4th Grade Social Studies

Password: ☐

Allow: ☐

Access Controls:

☐ Public ☐ Allow public editing
☐ Private

Functions:

☐ Discussion ☐ Blog
☐ Upload ☐ Users with my item
☐

Defaults for uploaded items

Title add field
Author
Source
Etc.

5. My Collections – Collections can be opened and their contents displayed. From this screen users search or browse one particular collection, access the metadata of items they wish comment on and annotate, and see what other users have those items in their collections.

My Profile	**My Collections**	Groups

Add Collection

Abraham Lincoln

Search This Collection [ ] Browse Subject, etc. Add Item

Items Sort By: Title, Source, etc

Abraham Lincoln Photograph edit
Year:
Resource Type: users with
Resource Format: this item
Source:
Link: www.abraham.com

Emancipation Proclamation edit
Year:
Resource Type:
Resource Format: users with
Source: this item

6. My Collections – Edit – Users edit individual items from their collection, adding notes, comments, ratings, etc. Names of added fields could be created by the user or chosen from a list that appears when add field is clicked. The Add link link could either be in the defaults for added fields, or separate, as shown below. Notes or links are inserted after the metadata fields they describe. There would also be a rating option to rate materials in the collection. Criteria on which ratings are based may be unclear to other users, but it would be possible to search ratings among a certain group, such as teachers, to assess usefulness. Groups are discussed below.

My Profile	**My Collections**	Groups

EDIT

Tags

Abraham Lincoln Photograph add field add link

Year: add note

Resource Type: add note

Resource Format: add note
Note: Only one photograph of Lincoln exists

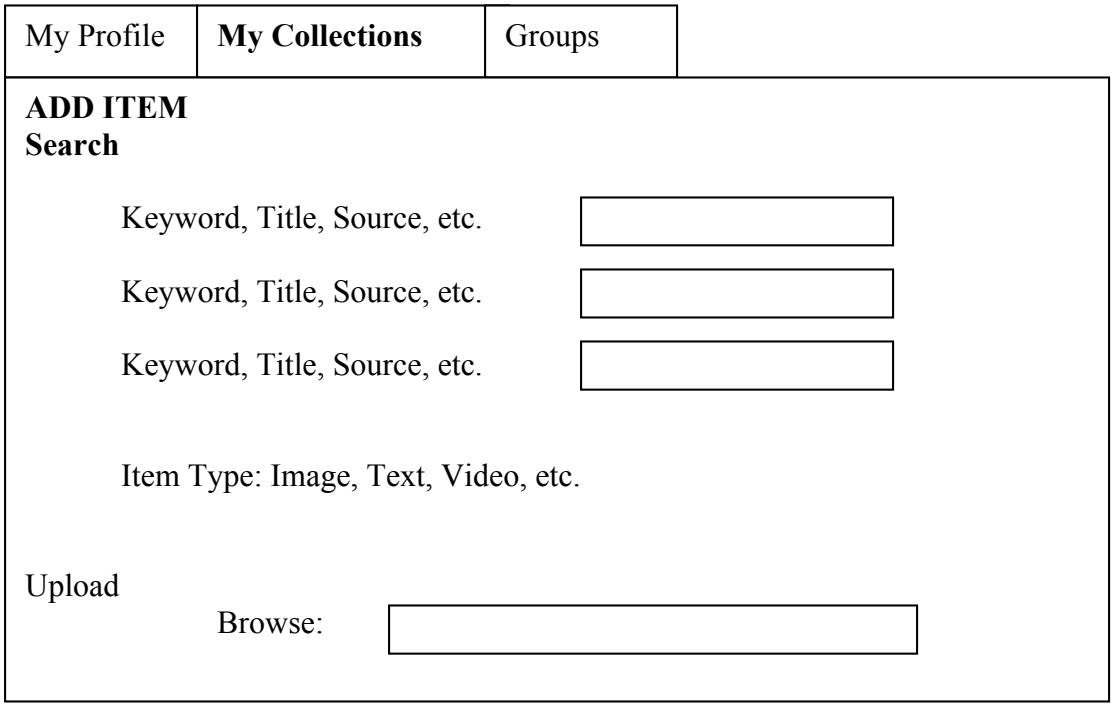
Source: Abraham Lincoln Papers add note

Descriptive Field: Added by Student

Link: www.abraham.com

Rate this Item: 1/2 to 5 stars

7. My Collections – Add Item Search – Here users search harvested objects and metadata to add items to their collection. Alternatively, they can upload their own.



8. My Collections – Add item – Users view results and add items to their collection. "add item to collection" contains a drop box where users choose which of their collections to add the item to.

My Profile	**My Collections**	Groups

ADD ITEM
Search Results

Results by Institution:

Indiana Historical Society
105 records

University of Chicago
32 records

562 results: Page 1 2 3 4 5 6 of 7

☐ Record 1 of 162
add item to collection

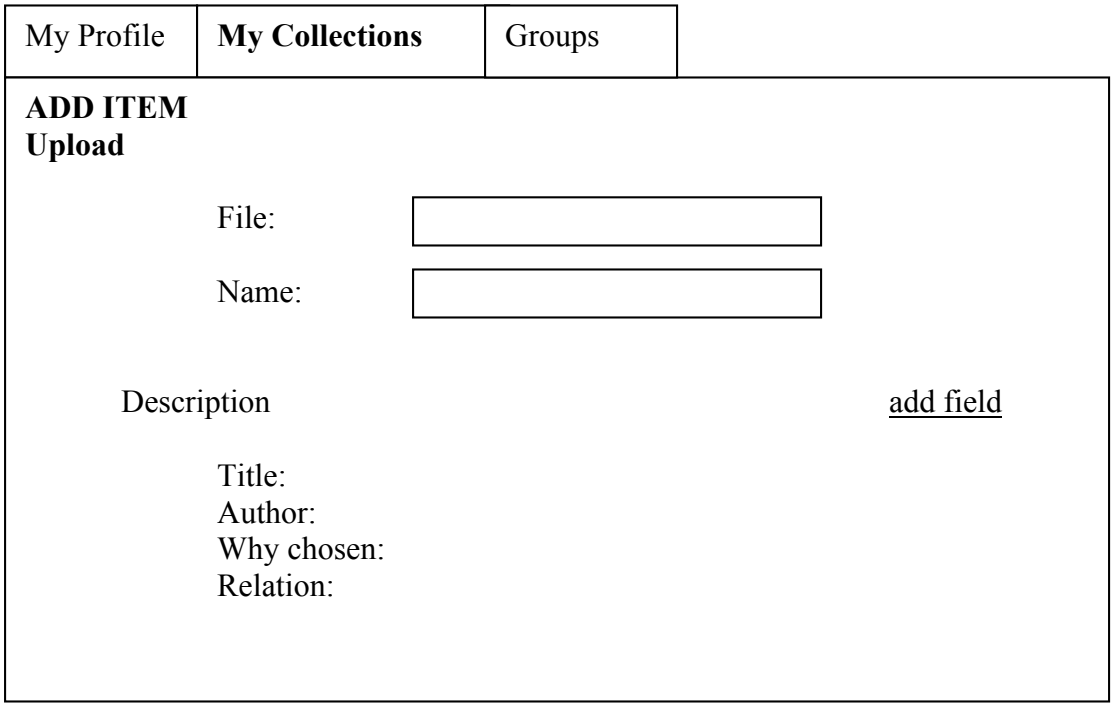
Title:
Year:
Resource Type:
Resource Format:
Source:

add selected items to collection

☐ Record 2 of 162
add item to collection

Title:
Year:
Resource Type:
Resource Format:
Source:

9. My Collections – Upload Item – Users upload their own items to the site. Description fields are specified when the collection is added. They can also be created or added here.

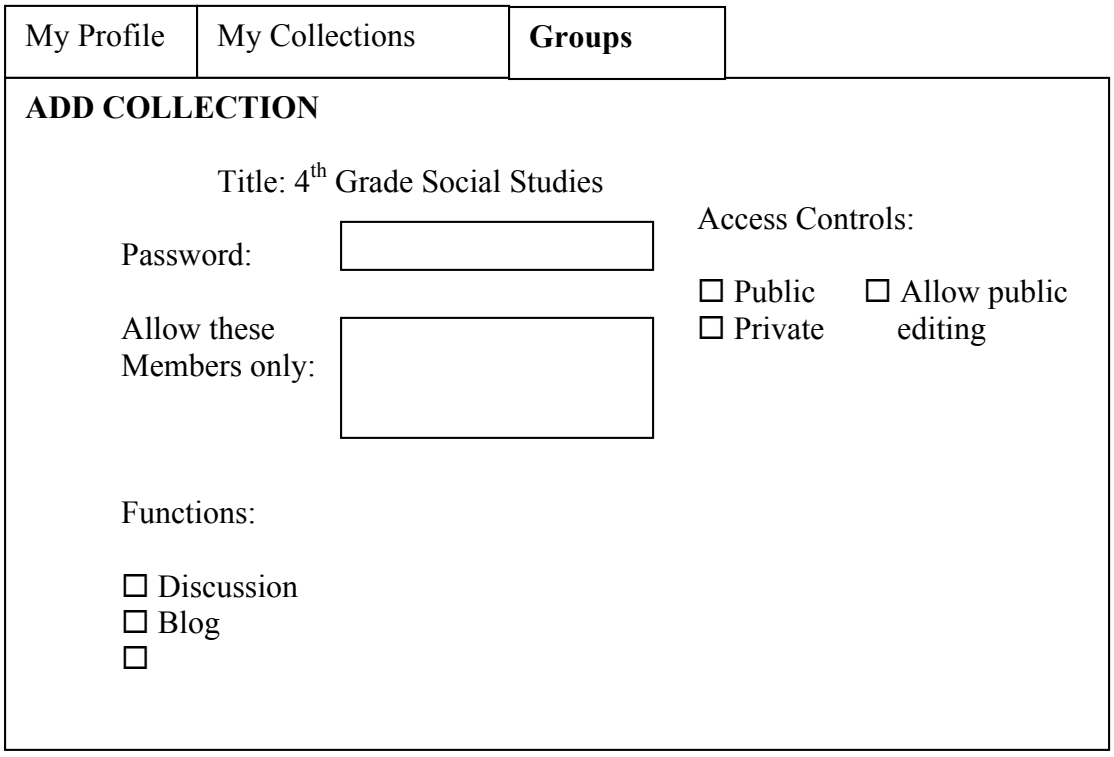


10. Our Groups – Groups can be created around any theme, by anyone. Each Group links to a variety of interaction options including a discussion board or blog, which are specified when a user creates a collection.

My Profile	My Collections	**Groups**

Groups:	Number of Members	Number of Dicussion Items	add group	edit group
Language Arts	32	154		
Social Studies	28	56		
Geography	31	265		

11. Our Groups – Add Group – When adding a group, a user can choose from many of the same options as when adding a collection. In groups there are no collections, but the creator can choose whether the group will be public or private, and the features of the groups, such as discussion, blog, and others that might be added to the site.



12. Groups – Each group has a discussion list and other features.

My Profile	My Collections	**Groups**

Language Arts add discussion item

1. Has anyone read the homework for tonight?
2. I have, what did you think of how John Jacob Astor was portrayed?

Bibliography

@ School: Primary Resources for Middle and Elementary School <http://www.atschool.org/materials/>

100 Milestone Documents <http://www.ourdocuments.gov/index.php?flash=true&>

Africans in America <http://www.pbs.org/wgbh/aia/home.html>

ALA Archives Digital Collections (UIUC) <http://web.library.uiuc.edu/ahx/ead/ala/digital/ala-digital.html>

American Rhetoric <http://www.americanrhetoric.com/>

America's Story <http://www.americasstory.com/cgi-bin/page.cgi>

ArchivesUSA <http://archives.chadwyck.com.proxy.lib.umich.edu/>

AwesomeStories.com <http://www.awesomestories.com/>

Barton, Keith C. "Primary Sources in History: Breaking Through the Myths." Phi Delta Kappan 86.10 (2005): 745-53.

Barton, Keith C. "Primary Children's Understanding of the Role of Historical Evidence: Comparisons Between the United States and Northern Ireland." International Journal of Historical Learning, Teaching, and Research (June 2001). <http://www.ex.ac.uk/historyresource/journal2/journalstart.htm>

Barton, Keith C., Alan W. McCully, and Melissa J. Marks. "Reflecting on Elementary Children's Understanding of History and Social Studies: An Inquiry Project with Beginning Teachers in Northern Ireland and the United States." Journal of Teacher Education 55.1 (2004): 70-90.

Bass, Randy. "Can American Studies find a Whole in the Net?" American Studies in Scandinavia (Fall 1996) (Odense University Press). <http://www.georgetown.edu/crossroads/guide/asins96.html>

Bass, Randy. "The Garden in the Machine: The Impact of American Studies on New Technologies." The American Crossroads Project <http://www.georgetown.edu/bassr/garden.html>

Bass, Randy. "A Working Synthesis of Technologies and Benefits." In Engines of Inquiry: A Practical Guide for Using Technology to Teach American Culture, American Crossroads Project, 1998.

Bass, Randy. "Engines of Inquiry: Teaching, Technology, and Learner-Centered Approaches to Culture and History" Engines of Inquiry: A Practical Guide for Using Technology to Teach American Culture, American Crossroads Project, 1998.

BBC: A-Z Interviews <http://digital.lib.msu.edu/projects/cookbooks/>

Bearman, David, Jennifer Trant, and Kelly Richmond. "Open Concepts: Museum Digital Documentation for Education through the AMICO Library." Art Libraries Journal 27.2 (2002): 30-42. <http://www.amico.org/docs.html>

"Becta Schools." <http://becta.org.uk/>

Bennett, N.A., Jones, T. (2001). "Building a Web-based Collaborative Database—Does it work?" Proceedings, Museums and the Web 2001, Seattle, WA <http://www.archimuse.com/mw2001/papers/bennett/bennett.html>

Bennett, N.A., Sandore, B. (2001) "The IMLS Digital Cultural Heritage Community Project: A Case Study of Tools for Effective Project Management and Collaboration." First Monday 6.7 (July 2001). <http://www.firstmonday.org/issues/issue6_7/bennett/index.html>

Bennett, N., B. Sandore, and E. Pianfetti. "Illinois Digital Cultural Heritage Community: Collaborative Interactions among Libraries, Museums and Elementary Schools." D-Lib Magazine 8.1 (2002) <http://www.dlib.org/dlib/january02/bennett/01bennett.html>.

Bennett, N.A., Sandore, B., Grunden, A.M., Miller, P.L. (2000). Integration of Primary Resource Materials into Elementary School Curricula. Museums and the Web 2000: Proceedings, Archives & Museum Informatics, Minneapolis, Minnesota, USA (2000), pp. 31-38. <http://www.archimuse.com/mw2000/papers/bennett/bennett.html>

Bennett, Nuala and Brenda Trofanenko. "Digital Primary Source Materials in the Classroom." Museums and the web 2002: the international conference about museums and the web. 2002. <http://www.archimuse.com/mw2002/papers/bennett/bennett.html>.

Bruton, Ben. "LJ Infotech Webwatch." Library Journal 2003.

Center for Children and Technology." <http://cct.edc.org/>.

Chickering, Arthur and Stephen C. Ehrmann, "Implementing the Seven Principles: Technology as Lever" <http://www.tltgroup.org/programs/seven.html>

Cole, Robert A. "Want to Come Alive? Take History Students to the Source." The Christian Science Monitor, Electronic Edition. 1 December 1998. <http://www.csmonitor.com/1998/1201/120198.feat.feat.3.html>.

Conway, Paul. Partners in Research: Improving Access to the Nation's Archive. Pittsburgh: Archives & Museum Informatics, 1994 <http://www.archimuse.com/publishing/partners.html>

Digital Cultural Heritage Community <http://images.library.uiuc.edu/projects/dchc/>

Edinger, Monica. "Time Travel with Primary Sources: Using authentic documents and artifacts will make history and literature burst with life for your students.(sample lesson for Thanksgiving)." Instructor (1990) 111.4 (Nov-Dec 2001): 18(3). General Reference Center Gold. Thomson Gale. University of Michigan - Ann Arbor. 17 Nov. 2006 <http://find.galegroup.com.proxy.lib.umich.edu/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T003&prodId=GRGM&docId=A80747648&source=gale&srcprod=GRGM&userGroupName=lom_umichanna&version=1.0>

Eyewitness to History.com <http://www.eyewitnesstohistory.com/>

Feeding America: The Historic American Cookbook Project <http://digital.lib.msu.edu/projects/cookbooks/>

Franklin, Cheryl; Waring, Scott. (2005). "Experiences of Elementary School Students Using Digital Primary Sources to Engage in Historical Inquiry." In C. Crawford et al. (Eds.), Proceedings of Society for Information Technology and Teacher Education International Conference (2005): 3818-3820. Chesapeake, VA: AACE

Gilliland-Swetland, Anne J., Layna White, and Robin L. Chandler. "We're Building it, Will they use it? the MOAC II Evaluation Project." Proceedings of Museums and the Web 2004 (2004) <http://www.archimuse.com/mw2004/papers/g-swetland/g-swetland.html>

Gilliland-Swetland, A.; Kafai, Y.; and Maddox, A. "Digital Portfolio Archives in Learning: Modeling Primary Content Transformation for Elementary Science Education." Final Report to the National Science Foundation CRLT August 1998. Award number 96-16396. <http://www.gseis.ucla.edu/research/dpa/digport.html>

Gilliland-Swetland, Anne J., Yasmin B. Kafai. "The Use of Historical Materials in Elementary Science Classrooms." (2000) <www.gseis.ucla.edu/faculty/kafai/paper/pdfs/Historical_Materials.pdf>

History/Social Studies for K-12 Teachers <http://k-12historysocialstudies.com/boals.html>

"History in the Raw." NARA website <http://www.archives.gov/education/history-in-the-raw.html>

Honey, Margaret and Jan Hawkins. Digital Archives: Creating Effective Designs for Elementary and Secondary Educators, May 1, 1996. Available at <http://www.ed.gov/Technology/Futures/honey.html>

Hoyer, Timothy P., Stephen Miller, and Alvin Pollock. "Consortial Approaches to the Implementation of Encoded Archival Description (EAD): The American Heritage Virtual Archive Project and the Online Archive of California (OAC)." Journal of Internet Cataloging 4.3/4 (2001): 113-36. <http://dx.doi.org/10.1300/J141v04n03_07>

Isidore of Seville <http://www.isidore-of-seville.com/index-all.html>

Kentuckian Digital Library <http://kdl.kyvl.org/>

Lawrence Township Public Schools: Using Primary Sources With Elementary Students <http://www.lawrence.k12.nj.us/staff.cfm?subpage=8463>

Learner.org <http://www.learner.org/resources/series166.html>

Lesson Planet <www.lessonplanet.com>

Memorial Hall Museum Online: American Centuries <http://www.memorialhall.mass.edu/>

McKenzie, Brian. "Simulations, sources, and the history survey course: making the Internet matter." Teaching History: A Journal of Methods 30.2 (Fall 2005): 82(9). Expanded Academic ASAP. Thomson Gale. University of Michigan - Ann Arbor. 17 Nov. 2006 <http://find.galegroup.com.proxy.lib.umich.edu/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=EAIM&docId=A138140771&source=gale&srcprod=EAIM&userGroupName=lom_umichanna&version=1.0>

Middle Tennessee State University: American *Women's* History: A Research Guide <http://frank.mtsu.edu/~kmiddlet/history/women.html>

Monadnock Regional School District: Elementary Library Services Subject Links Page <http://www.mrsd.org/~library/primarysources.htm>

Morris, Ronald V.; Morgan-Fleming, Barbara; Janisch, Carole. "The Diary of Calvin Fletcher-- Using Primary Sources in the Elementary Classroom" in The Social Studies. (July 2001).

Moyer, Judith, Joseph Onosko, Charles Forcey and Casey Cobb. History in Perspective (HIP): A Collaborative Project Between the University of New Hampshire, SAU #56, and 13 Other School Districts. The History Teacher (Long Beach, Calif.) 36 no2 186-205 F 2003 <http://firstsearch.oclc.org/FSIP?sici=0018-2745%28200302%2936%3A2%3C186%3AHIPHAC%3E&dbname=WilsonSelectPlus_FT>

My Israel Source <http://www.myisraelsource.com/>

National Archives and Records Administration <www.archives.gov>

National Digital Library. Digital Library Initiatives < http://memory.loc.gov/ammem/dli2/index.html>; National Digital Library Program < http://memory.loc.gov/ammem/dli2/html/lcndlp.html>; Challenges <http://memory.loc.gov/ammem/dli2/html/cbedl.html>

National Council for History Standards. "Preface." National Standards for History, Basic Education, 1996. National Center for History in the Schools, UCLA, 1996. Available at <http://www.sscnet.ucla.edu/nchs/standards/>

New Hampshire Historical Society: School Programs <http://www.nhhistory.org/edu/support/nhsourcesindex.htm>

OAIster <http://oaister.umdl.umich.edu/o/oaister/>

O'Malley, Michael and Roy Rosenzweig, "Brave New World or Blind Alley? American History on the World Wide Web," Journal of American History (June 1997). <http://chnm.gmu.edu/assets/historyessays/bravenewworld.html>

Open Archives Initiative <http://www.openarchives.org/>

Palmer, Rosemary G., Roger A. Stewart. "Models for using nonfiction in the primary grades." The Reading Teacher 58.5 (February 2005): 426. ISSN: 0034-0561 <http://firstsearch.oclc.org/FSIP?sici=0034-0561%28200502%2958%3A5%3C426%3AMFUNIT%3E&dbname=WilsonSelectPlus_FT>

ProTeacher <www.proteacher.com>

ProQuest K-12 <http://www.proquestk12.com/>

Rare Book, Mansucript, and Special Collections Library: Duke University <http://library.duke.edu/specialcollections/>

Ready, 'Net, Go! <http://www.tulane.edu/~lmiller/ArchivesResources.html>

Repositories of Primary Sources (University of Idaho) <http://www.uidaho.edu/special-collections/Other.Repositories.html>

Sandore, Beth. "Open Archive Initiative: Final Report" (2003) <http://oai.grainger.uiuc.edu/index.htm>

SCORE History/Social Science <http://score.rims.k12.ca.us/>

Singleton, Laurel R., and James R. Giese. "Using online primary sources with students.(includes list of collections at the Library of Congress' Web site and sample document)." The Social Studies 90.4 (July-August 1999): 148(4). InfoTrac OneFile. Thomson Gale. University of Michigan - Ann Arbor. 17 Nov. 2006 <http://find.galegroup.com.proxy.lib.umich.edu/itx/infomark.do?&contentSet=IAC-Documents&type=retrieve&tabID=T002&prodId=ITOF&docId=A55367250&source=gale&srcprod=ITOF&userGroupName=lom_umichanna&version=1.0>

Teachers Helping Teachers <http://www.pacificnet.net/~mandel/>

Teaching with Digital Content: UIUC <http://images.library.uiuc.edu/projects/tdc/LessonPlans/index.html>

Texas Education Agency <http://www.tea.state.tx.us/ssc/index.html>

The Avalon Project at Yale Law School <http://www.yale.edu/lawweb/avalon/avalon.htm>

The History Channel <http://www.history.com/>

The Library of Congress: American Memory <http://memory.loc.gov/ammem/index.html>

The Library of Congress: Primary Documents in American History <http://www.loc.gov/rr/program/bib/ourdocs/PrimDocsHome.html>

The Perseus Digital Library <http://www.perseus.tufts.edu/>

University of Richmond: Elementary Studies on the Web: Guided Tour <http://www.awesomestories.com/>

Whyy: Across the Generations <http://www.whyy.org/generations/primary.html>

Zehr, Mary Ann. "Screening for the Best." Special Report of Technology Counts '99: Building the Digital Curriculum (2006) <http://counts.edweek.org/sreports/tc99/articles/screening.htm>.