dh+lib

Literacies in a Digital Humanities Context

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Introduction

by Melanie Hubbard and John Russell

Librarians are well aware, as are many faculty, of the intricate relationships between digital humanities (DH) and literacies—information literacy, visual literacy, digital literacy, data literacy, and the like. Scholarship centered on this intersection is spread across books and journals in numerous disciplines, however. Because of this broad range of publication venues, the scholarly conversation around DH and literacies has not always been easy to follow. In response, this special issue is an attempt to bring together practitioners and foster discussion from a number of perspectives, providing 'on the ground' applications that, we believe, will encourage and empower our colleagues and peers to engage more deeply in this work.

The first half of this issue represents different takes on digital humanities literacies. Kayla Abner argues for the centrality of data literacy by focusing on threshold concepts illuminated by examples from the digital project Torn Apart/Separados. The next three articles work through how aspects of the digital humanities can facilitate teaching and learning different literacies. Alex Wermer-Colan and Jasmine Clark show how interactive, multimedia experiences can help lower barriers to primary source literacy by describing their work bringing the Charles Blockson Collection to high school students in Philadelphia. Olivia Wikle, Evan Williamson, and Devin Becker discuss how static web technologies (their own CollectionBuilder, in particular) engage students more deeply in the technical systems that enable web publishing. Jared Nistler and Sarah Ketchley provide a case study of an online digital humanities course that engaged a number of digital literacies while teaching the students text analysis using different platforms and approaches. Finally, Jason Crider and Wesley Smith interrogate the concept of digital literacy and ask a much bigger question: is digital literacy the appropriate framing for engaging with digital media today?

The second half of this issue consists of articles that more closely address the intersection of digital humanities and information literacy as expressed in the ACRL Framework for Information Literacy for Higher Education. Craig Dietrich, Christopher Gilman, Darren Hall, and Jacob Alden Sargent discuss how they use the Framework's structure in the design of undergraduate project-based digital assignments and provide specific examples of how they have incorporated the use of digital platforms such as Scalar. Similarly, Rebecca Eve Graff, Emily Grubbs, and Emma Annette Wilson explain how the Framework provided the underpinning for a digital humanities English course devoted to the creation of a digital collection. Colleen Farry explores the Framework's threshold concepts and how she used them to ground classroom activities; she also provides insight into how she developed her pedagogy while incorporating her pre-existing digital services librarian knowledge and skills. Finally, Kate L. Ganski and Ann Hanlon discuss how they retrospectively applied a Framework lens to the work of a

DH Teaching Fellows cohort, and how, by applying that lens, they were able to identify specific frames and ways that teaching librarians can be more deliberate in their incorporation of information literacy concepts into future DH-influenced assignments.

The impetus for this issue came from an informal group of librarians who saw a need for a conversation that examines DH work through the lens of literacies. We hope that this special issue spurs future conversations about this topic and brings new contributors to the table. We know there is much more to explore and, as the disciplinary breadth of this issue attests, there are many connections to be made among librarians, information and instructional technologists, instructors, and students. Together we can explore this subject as a community and ask how we can effectively disseminate our understanding to our colleagues. And, as we seek to transfer our knowledge to students, ask how do we develop assessment.

These articles are published thanks to the efforts of the editors of this special issue - Melanie Hubbard, Mackenzie Brooks, Jody Perkins, and John Russell - and the members of the dh+lib editorial staff who helped review proposals and submitted articles - Sarah Melton, Patrick Williams, and Nickoal Eichmann-Kalwara. Our thanks also to the authors for their work and their patience as this process was slowed down due to COVID-19.

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The Virtual Blockson: Immersive Technologies for Teaching Primary Source Literacy on the African Diaspora

by Jasmine Clark and Alex Wermer-Colan

"My main goal in life is to build a good library of Black history – knowledge is a form of Black power and this is my part in it. "
– Charles L. Blockson

Introduction: Immersive Archives and Virtual Literacies

By overviewing a collaborative project between Temple University's Charles L. Blockson Afro-American Collection, the Loretta C. Duckworth Scholars Studio, and local Philadelphia educators, this essay explores how experimentation with immersive technology can enhance the work of librarians and teachers seeking to teach primary source literacy. As a recreation of the space and the experience of visiting the Blockson Collection through interactive game-play and multi-media 3D content, the Virtual Blockson aims to combat black erasure from the historical record and school curricula, introducing students to the roles they can play in history's creation and preservation.

This essay will highlight the Virtual Blockson's design for integrating the Society of American Archivists' Guidelines for Primary Source Literacy, as well as the Common Core standards for historical understanding and critical thinking. Digital humanities projects that remediate special collections with interactive spatial simulations can offer promising opportunities to contextualize and explore the imbrication of primary source and digital literacies for marginalized communities.

The Charles L. Blockson Afro-American Collection

Temple University is home to a number of unique special collections containing wide-ranging primary sources, including the Paskow Science Fiction Collection and the Urban Archives of Philadelphia. Perhaps Temple's most distinct is the Charles L. Blockson Afro-American Collection, founded in 1984 when Dr. Charles L. Blockson donated a substantial portion of his personal collection to Temple University. The collection is the direct outcome of Dr. Blockson being told by an elementary school teacher that "Negroes have no history," a lie that he spent his life disproving by collecting everything he could relate to the lives of black people.

Over the decades, the Blockson has become one of the most prestigious collections of African-American artifacts in the U.S, housing over 700,000 items

Charles L. Blockson holding lithograph of Frank Johnson, circa 1990s. (Photo courtesy of the Charles L. Blockson Afro-American Collection)

relating to the global black experience in multimedia formats, including books, manuscripts, sheet music, pamphlets, journals, newspapers, magazines, broadsides, posters, photographs, vinyl records, other ephemera, as well as artifacts, statues and busts, musical instruments, and dolls.

Volunteers for MLK Day of Service at Temple University attend Open House at the Charles L. Blockson Afro-American Collection, January 21, 2019 (Photograph by Bruce Turner)

Located on Temple University's main campus, and separate from the Temple Libraries' Special Collections Research Center, the Blockson Collection regularly serves as a site for research and teaching. The Blockson's Curator, Dr. Diane Turner, Associate Archivist Leslie Willis-Lowry, and Librarian Aslaku Bernahu regularly coordinate class visits and event programming meant to support awareness of the African Diaspora's centrality to global culture and history.

Across the street from the Blockson Collection, Temple University's new Charles Library is home to the Loretta C. Duckworth Scholars Studio, a hub for researching and teaching innovative uses of technology, offering services to students and faculty, including an immersive visualization studio, a makerspace, and a specialized computer lab. Bridging these two departments, the Virtual Blockson seeks to uncover the potential for emerging technology to enhance the Blockson's mission.

Literacies at Play

When mediated through emerging technologies for distant and virtual learning

increasingly crucial to education today, the Blockson Collection can serve as a compelling lens through which students can analyze intersecting literacies at play in the construction of history.

The primary audience for the Virtual Blockson are high school students within the Philadelphia Public School System (PSD). Half of the PSD student population is black, and the other half is majority Latinx. During the 2018-2019 school year, 70.8% of Philadelphia School District students were low income. While many academic researchers are first introduced to archives as part of their college education, only 54% of PSD seniors have a first-fall college matriculation rate (for more, see the Philadelphia School District's "School Enrollment and Demographics" data).

With all of this in mind, at least two key literacies need to be addressed by the Virtual Blockson in order to support primary source research skill development, while also adhering to existing learning standards for primary source literacy and the Pennsylvania Academic Standards for History.

The Virtual Blockson incorporates the Guidelines for Primary Source Literacy, drafted by the Society of American Archivists (SAA) and Association of College and Research Libraries' (ACRL) Rare Books and Manuscripts Section (RBMS) Joint Task Force on Primary Source Literacy (JTF-PSL). According to these guidelines, primary source literacy is defined as having the competency, knowledge, or skills required to work with primary sources. Primary source literacy is inherently interdisciplinary and emphasizes flexibility depending on the learning context.

The JTF-PSL guidelines focus on students becoming familiar with 1) analytical, 2) ethical, and 3) theoretical concepts at play when utilizing primary sources, along with 4) practical considerations pertaining to access to materials, technology, and research management (JTF-PSL 3). These concepts provide guidance in assessing what each individual learning context required for primary source literacy education. They also underlie five core learning objectives and provide actionable, measurable ways to assess whether primary source researchers can 1) conceptualize; 2) find and access; 3) read, understand, and summarize; 4) interpret, analyze, and evaluate; and 5) use and incorporate the archival materials.

These learning concepts and outcomes are represented and supported in Pennsylvania's Academic Standards for History, emphasizing analysis of artifacts, and understanding of factors influencing history. This approach hinges upon the interrogation of bias in the creation and curation of materials, and their entanglement with issues of agency, cultural heritage, and collective memory. This practice aligns perfectly with Blockson's ideals of historical agency and knowledge for black people.

For students to learn these literacies, prerequisite skill development and on-

boarding must take place. In order to access the Blockson's archival materials, PSD students have to learn how to cross the cultural and spatial lines demarcating special collections housed in universities, small repositories, and other library/museum environments that have historically ignored minority's perspectives and restricted their access. The Blockson Collection's very existence acts as an agent of change in rectifying the collective memory of the African Diaspora, offering an opportunity for amplifying and empowering dispossessed communities through emerging technologies.

The ways materials are contextualized within Blockson's collection already challenge the colonial narratives of black history found in many historical collections. Blockson's version of this narrative does not begin at slavery but situates blackness within a larger historical, social framework that also interrogates colonial depictions of that same culture and historical biases still rooted in our society. When mediated through emerging technologies for distant and virtual learning increasingly crucial to education today, the Blockson Collection can serve as a compelling lens through which students can analyze intersecting literacies at play in the construction of history.

Why Virtual Reality

The Virtual Blockson project aims, in part, to serve as a vehicle for enhancing the wide array of pedagogical practices central to the Blockson Collection's mission. Immersive technologies inherently introduce students to a range of literacies required for engaging with new media. By integrating the game-based virtual experience with learning exercises, discussion templates, and composition assignments reflecting on the learning experience, the Virtual Blockson builds upon the work of teachers and librarians already educating users in primary source literacy and digital literacy. The ability to capture screenshots and other information gleaned during the virtual archival visit can serve as reproductions available for students to cite in their scholarship. Utilizing 3D models of items from the collection set in the recreated Blockson space, gamified activities, like mapping photographs of Philadelphia, can further aid students in analyzing and critiquing the nature of archives, the role archives play in the construction of history, and the role individuals, like Dr. Blockson and the students, can have in shaping the historical record.

Multiple factors make virtual reality a suitable medium for this project's goal of teaching primary source literacy; the most important feature is the collection's intended audience. The Virtual Blockson does not look to replace traditional primary source literacy education efforts, wherein students visit a repository to view materials and get a better understanding of its purpose. Instead, this project aims to enhance those efforts with greater context in an engaging medium. The idea of archival intimidation (the intimidation that first-time users may experience) is one that is explored in archival literature; however, as previously discussed, there are additional layers to that intimidation that come from the

intersecting identities common to PSD students. The use of virtual reality looks to immerse students in a space they may otherwise never visit while providing time and guided activities to help students deconstruct the ways they access and interact with the space and objects, as well as to understand what groups of people spaces like these tend to exclude.
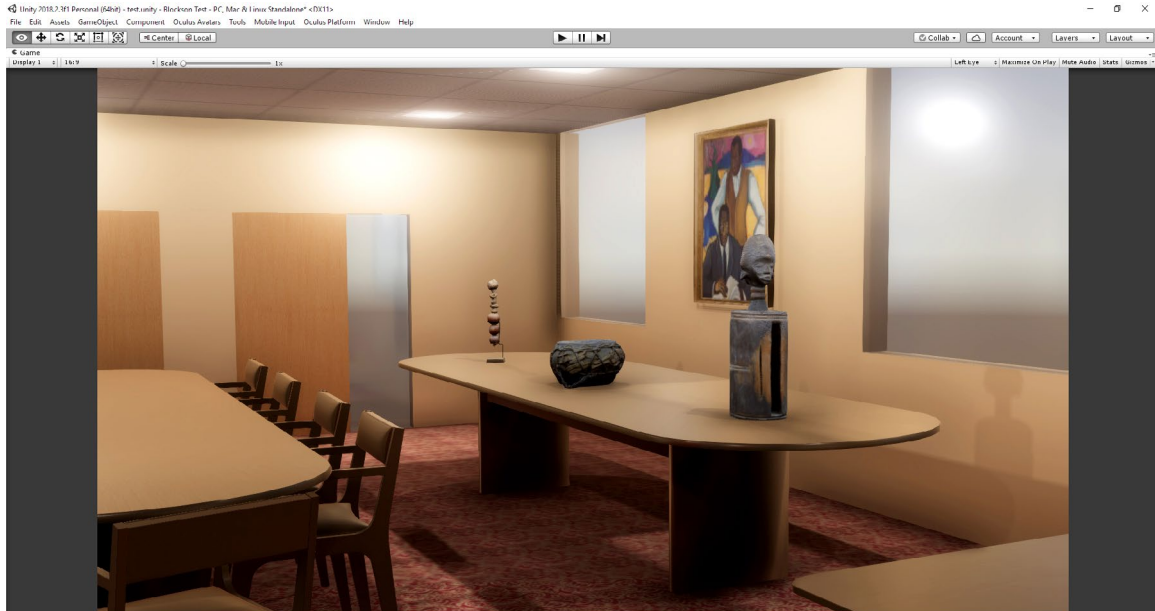
Unity 3D *virtual recreation of the Charles L. Blockson Afro-American Collection, 2019 (Development and screen capture by Jordan Hample)*

The Virtual Blockson is not solely focused on primary source research; it is also focused on emphasizing the archive as an institution itself. It places students in a virtual space by introducing the user to what archives are meant to accomplish, how archives work, what to expect when visiting, and the role archives play in the production of narratives that become historical canon. The Virtual Blockson onboards students to virtual reality while guiding them through navigating the virtual space, learning the rules and etiquette of archival research, and the steps for requesting materials to inspect. Once adjusted to the environment, the Virtual Blockson simulates student learning of primary source literacy and archival research through game-based, interactive modules involving puzzle-solving and decision making. The spatialized, mobile experience furthermore reduces the distraction of students' typical multitasking between computer screen and smartphone. By taking advantage of this relatively novel medium for interactive role-playing, by offering, for instance, opportunities to conduct the detective work of tracing the materials and construction of a musical instrument, the Virtual Blockson aims to inspire students to seek to preserve their own history and contribute to a better future for special collections and history on the African Diaspora.

A second benefit of virtual reality is the opportunity for flexible modes of engagement. There are not only different types of immersive technologies (VR/AR/XR) but also different ways of experiencing each type of immersive technology.

Virtual reality headsets like the Oculus Go offer a solitary experience for users who prefer it. However, VR headsets, especially tethered ones like the HTC VIVE, allow users to easily share their experience on a monitor so that peers can observe and engage at the same time. Smartphone-based headsets like Google Cardboard or GearVR reduce barriers to entry and increase flexibility in access, offering relatively affordable ways to introduce students to the basic affordances of 360 technologies available on their smartphones, while presenting opportunities for students to think critically about their everyday technologies capabilities and limitations.

For all users, immersive technologies, in their wide-ranging modalities, have the under-explored potential for increasing the accessibility of site-specific research. The Virtual Blockson's success will depend in large part on the extent that we can integrate and innovate accessible user design features for navigation and interaction with archival spaces and objects.

Conclusion

Emerging technologies for 3D mediation, especially virtual and augmented reality, offer ways for students to recontextualize and expand their relationship to history, archival spaces, historical objects, and their existing history curricula. While pedagogical approaches to primary source literacy have evolved standards and best practices shared across fields and disciplines, the use of digital technology to enhance primary source literacy remains experimental, despite the fact that emerging 3D technologies offer novel ways to reach new audiences and guide students to think about primary source literacy as part and parcel of their literacy with emerging technologies in new media. By finding synergies between analog and digital technologies, the Virtual Blockson seeks to innovate primary source literacy pedagogy to enable playful gamification of archival research and open up new questions about the role of new media in the development of research skills.

The growing priority for education and GLAM (galleries, libraries, archives, and museums) institutions to support distant learning demands new ways of thinking about how digital surrogates for primary sources can be commensurate to the spatial and interactive experience of encountering such objects in physical space for learning such essential skills as fieldwork and archival research. As virtual reality becomes increasingly mainstream, projects like the Virtual Blockson also make headway towards diversifying the available 3D assets for cultural heritage and showing a new generation of students from a wide range of backgrounds the educational potential of this emerging technology.

As an experimental innovation in digital collection development and curation more broadly, immersive technologies offer a radical new way to present archival materials to students, enhancing their familiarity with fundamental forms of digital literacy by exposing them to a multimodal, interactive environment. Such

a simulation can increase student interest in visiting the physical archive and, through the embodied experience of playing the role of archival researcher, can raise student awareness about the ways that they too, like Charles Blockson, can collect their past and their present, understand their place in the world, and take agency over their own history and future.

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What is Static Web and What's it Doing in the Digital Humanities Classroom?

by Olivia Wikle, Evan Williamson, and Devin Becker

Almost a decade ago, Matthew Kirschenbaum and Micah Vandegrift presented compelling and well-argued ideas about where the locus of digital humanities, or, more broadly, digital humanists should be within the academic context. The intervening years have demonstrated the unique capacity of DH to thrive in a variety of departments, centers, and libraries with specialties that range from making things to theoretical discourse and encompassing everything in between. As the community of DH practitioners has grown, so too has the popularity of several entry-level DH tools. In the classroom context, popular platforms like Omeka and Scalar play an important role in removing barriers and facilitating a relatively easy entry into web authorship for those without coding skills. New static web-based approaches, however, have emerged as important additions to the DH pedagogical toolbox. These approaches and the tools that facilitate them, such as Ed, Wax, and CollectionBuilder, continue to implement the critical thinking, curation, and storytelling literacies that DH tools teach, while also expanding students' technological literacies into more fundamental areas of computing.

The expanded literacies that these tools encourage include basic knowledge of file systems, web servers, and data management, concepts that students pursuing a humanities-centered education may not typically encounter. Broadening the pedagogical scope to include these concepts provides an opportunity for those teaching DH focused classes and workshops to avoid focusing solely on what John Russell and Merinda Kaye Hensley have termed the "buttonology" of a platform, i.e., teaching specifics of an interface without introducing students to basic technical concepts and methodologies that make the system work. As Dennis Tenen argues, focusing on these broader concepts when introducing a platform makes students less likely to misconstrue the tool itself as a methodology. Such explanations, in turn, help them to avoid the tendency to interpret a project's output as the end goal without trying to understand the hidden algorithms and data manipulation that produces that output.

Teaching these fundamental digital skills does not entail a sacrifice: we should not have to give up teaching critical thinking skills in order to incorporate more fundamental computational concepts—part of the uniqueness of DH is its capacity to encourage new ways of thinking via innovative modes of knowledge production. Rather, we should be mindful of how the tools we use fit the contexts in which we teach, and, importantly, how we can use them to encourage both types of learning. Static web approaches, and static site generators, in general, can be used to make explicit the relationship of content as data, which is of both technological and critical value to humanities students who are often asked to

engage with the question, "What is humanities data?"

Static web tools designed for the DH classroom facilitate teaching fundamental digital literacies because they ask that students use them without the familiarity of a GUI interface. By encouraging students to engage in this exploration in a supported environment, educators can help students learn how to approach digital content with a critical mindset and a nuanced understanding of the systems that control the technology we use, thereby empowering them with a more informed approach to the digital systems that permeate most aspects of their lives outside the classroom. In a DH context, static web tools have the capacity to reveal rather than hide the computational workings that drive them, promoting hands-on classroom engagement that increases literacies of the web, data, and digital objects.

Static Tools in DH Contexts

In the last decade, dynamic web applications, including content management systems (CMS) such as WordPress and Drupal, have dominated the web landscape as DH platform choices, which often include features such as user authentication, live comments, and endless personalized streams where pages are dynamically rendered on the fly. The functionality that these systems afford, however, comes at significant infrastructure cost, requiring robust server-side processing, databases, and complex software stacks (and the IT expertise necessary to maintain them) to deliver content to users. The details of this complexity are hidden from content creators who interact with the platform only via a web-based administrative interface, positioning learners as software users rather than software authors. This approach fundamentally limits the technical concepts that can be taught, and, as Paige C. Morgan argues, constrains the types of research questions that DH practitioners can ask.

As an alternative to these complex systems, minimalistic approaches powered by modern static web generators have experienced a recent boom. Static site generators are tools that transform a structured folder of files containing content, templates, configuration options, and data to build out a complete website composed of "static" HTML, CSS, and JS files. These generated files can then be copied onto a minimal web server, which requires no database or server-side processing and will deliver the files unchanged to your browser.

In contrast to the dynamically generated pages of CMS platforms, static websites provide several benefits, including:
- faster performance
- lower bandwidth usage
- minimal hosting requirements
- fewer security vulnerabilities
- simple version control

This simplicity also means that static sites are easier to preserve and more sus-

tainable than dynamic sites, as the basic files on the server, even if left unmaintained, will still deliver the website years later, despite the fact that their look may become dated. This is especially important for DH projects given the lack of long term support most DH centers and practitioners can provide for projects. Projects built on CMS platforms, in contrast, are more at risk of becoming malware zombies, a reality that led Quinn Dombrowski to recently caution the DH community not to "leap into buying a pony."

In DH, the use of modern static web tools to build projects is often referred to as minimal computing, which is both a computing practice enacted "under a set of significant constraints," as well as a critical movement that seeks "balance between gains and costs in related areas that include social justice issues and de-manufacturing and reuse." As Alex Gil defines it, the essence of minimal computing is that it attempts to address what a project really needs, using sustainable tools and methods. In practice, minimal computing often entails stripping away unnecessary overhead in order to mitigate reliance on databases and middleware, as well as to relieve significant requirements for processing power and storage.

Gil has been particularly active in developing the concept and enacting the practice of minimal computing. With his collaborator Marri Nyrop, he has developed two "minicomp" tools, Ed and Wax, that serve as excellent examples of the promise of this approach. Both make use of the static web generator Jekyll, as well as GitHub Pages' capacity to host websites from GitHub repositories, acting as templates that facilitate users' entry into the static web within a DH framework. When used in a pedagogical context, as Gil, Nyrop, and others have done in workshops across the country, these projects open up possibilities for students to learn transferable fundamentals of web development and data management that are just as meaningful as the final output itself. In a similar vein, our own project for creating digital collections, CollectionBuilder-GH, is specifically designed to teach both the critical and technical literacies involved in producing digital libraries.

A Scaffolded Approach to DH Literacies

CollectionBuilder is an open source template for creating digital collection and exhibit websites that are driven by metadata and hosted on GitHub Pages. To generate a digital collection, participants:
- create metadata in a spreadsheet
- organize a folder of digital objects
- set up a repository on GitHub
- configure their site's basic settings
- explore their collection website hosted on GitHub pages
- iteratively customize and debug to learn more

The steps to build the collection expand on one another, producing a scaffolded framework that begins with a firm foundation in quality metadata creation and

encourages the exploration of new concepts as the collection is developed. The technical and critical skills that emerge from this process encourage the development of interwoven data and web literacies, centered around the collection's metadata as represented within a comma-separated values file (CSV).

By creating well-formed metadata in a spreadsheet, students learn fundamental data (and library!) literacies related to controlled vocabularies, unique identifiers, table-based data representations, and collaborative data cleaning and analysis. As they use these concepts to distill digital archival objects into data in the form of records and fields on a spreadsheet, students also confront the difficulty inherent in curating and representing archival materials online in a way that conveys their original forms and context, making explicit the interpretative biases that necessarily go into this descriptive work. This lesson is further driven home when they see their changes published on the web, which inevitably surfaces anomalies, breakages, and misrepresentations tied to issues in the metadata that they return to the spreadsheet to fix. The iterative nature of this process encourages students to learn the importance of well-structured data and attention to detail, while also helping to demystify "data" in general and complicate the claims often made for its objectivity.

The data literacies students develop in this process are intertwined with several web literacies as well. Students using CollectionBuilder edit and revise their data in a GitHub repository, using Git-based version control. Doing so, they must navigate their repository's directory structure and conceptualize the ways these separate files work together to produce the site. In the process of committing these edits and observing the changes they make, students learn valuable coding, computing, and collaboration concepts that are inherent to version control practices and foundational to modern web development practices. Version control also allows students a safety net to break the code itself, as they can be taught to revert the repository to a former status. This enables them to safely make edits to Markdown, HTML, and CSS files and observe how these edits make a visible impact on the collection site, altering anything from the site's About page to the algorithms producing the visualizations.

CollectionBuilder's scaffolded nature not only encourages these literacies but also makes the tool flexible enough to be staged for a variety of learning environments to focus student engagement in different aspects of the digital collection process. For example, a class of undergraduate History majors at the University of Idaho used CollectionBuilder to create a digital collection using archival materials they curated and digitized themselves. This learning experience prioritized engagement with traditional archival research methods while expanding students' critical understanding of digital repositories and their technical skills. In another scenario, a University of Idaho graduate student created a sophisticated digital collection to complement and expand her dissertation during a summer learning fellowship. In this case, CollectionBuilder provided a new way to think

about research data and communicate results. In both of these examples, students integrated data and web literacies with their disciplinary knowledge, employing technical methods that informed and enabled further humanistic inquiry.

Conclusion

Overall, the pedagogical approach we use with CollectionBuilder scaffolds users' learning of open data and web fundamentals via a sequence of tasks that begin with and build off of the simple act of creating a spreadsheet. As this and similar tools (such as Wax and Ed) demonstrate, incorporating static web tools and methodologies into our DH pedagogical practices has the capacity to expand the literacy concepts we teach and to empower students to more critically engage with the digital systems pervasive throughout society.

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Data Literacy as Digital Humanities Literacy: Exploration of Threshold Concepts

by Kayla Abner

For those who are both librarians and digital humanities instructors, we must either create new frameworks for teaching and learning or attempt to map existing ones to library instruction. "Digital humanities literacy" is a combination of many literacy areas. Still, the prevalence of data in both our daily lives and in digital humanities places data literacy in a position of importance. Below, I propose threshold concepts for data literacy and illustrate how those concepts can provide a lens through which we can explore a piece of digital humanities scholarship. Defining threshold concepts will be useful in communication among digital humanists and our daily pedagogical work.

To illustrate the application of these threshold concepts, I explore the data visualization project, Torn Apart/Separados, through a data literacy lens. The project team has clearly documented and shared their data collection processes and acknowledge the data's limitations. Through these means, they invite a critical assessment of the data and its use, an overarching principle of data literacy (Calzada Prado & Marzal, 2013).

To discuss the utility of threshold concepts in data literacy, we must start from a shared understanding of them. Threshold concepts represent information previously not known by the learner, and once a person learns and understands that information, it permanently and drastically changes their perception of the topic (Meyer, Land & Baillie, 2010). A person who understands a threshold concept can ask more precise questions and will exhibit certain behaviors that show a deep level of understanding.

Data literacy, broadly, is the ability to critically create, manipulate, manage, analyze, understand, and communicate data (Koltay, 2014; Calzada Prado & Marzal, 2013; Fontichiaro & Oehrli, 2016). Based on relevant work in data literacy and digital humanities, and topics I've found to be pertinent in my teaching, I propose and discuss preliminary threshold concepts for data literacy in digital humanities below. I've used these as a basis for defining learning outcomes and assessing students' learning around working with humanities data. These concepts are understanding data as human and/or machine created information, recognizing data as only one part of a narrative, and the role of data in scholarship.

Data is both Machine and Human-Created

Data is not inherently objective, even when created through a seemingly objective process.

Key questions for exploration:
- Who or what created (or guided the creation of) this data?
- How was the data created?
- What human or machine-based biases are present?

Information literacy sessions typically cover familiar forms of knowledge dissemination, like books and presentations, which are directly created by humans. Data, on the other hand, can be created or simply influenced by humans. Increasingly, computational systems may not need direct input to create data (think a timestamp on a saved file), or they can create new information based on previous input (think machine learning). Even lacking direct input, the system programmer decides when one thing happens, another thing must be true, or a behavioral researcher decides one variable is important to collect while another is not. Data is always affected by human intervention, even if a human did not directly create it. As such, data is not inherently more objective than a journal article or conference talk, though we often hear that students tend to see data in this way (Fontichiaro & Oehrli, 2016). As much as we try to remove bias from our computing processes, decisions made during the creation process influence the final dataset because "people choose what to count or measure" (Schield, 2004, pp. 7).

Data in Torn Apart/Separados Volume 1 is gathered from multiple governmental sources, including the US Immigration and Customs Enforcement (ICE) division, and restructured to fit the needs of the project. One variable that ICE collects on its detainees is whether they are "criminal." An early learner of data literacy might accept that information as fact, without asking more questions about how the value of "criminal" is determined. Criminal is a loaded term with meaning that can vary based on cultural, societal, and even demographic factors (do we consider a child who steals candy a "criminal"?). Which crimes earn a "criminal" signifier? A data literate person will ask questions about how the value is determined, who assigns the value, and what societal factors might influence the value. These are research questions in their own right, and the answers are not always readily (if at all) available. However, when learners understand the process of data creation as wholly guided by humans, they think critically about that process and how that affects any data they examine. These effects can be mitigated by supplementing a data-based result with other pieces of information.

Data is One Part of the Story

Data is one piece of a whole narrative, and cannot give a complete picture alone.

Key questions for exploration:
- What does the data seem to tell us?
- What other information do we need to complete the picture?

Data serves as a "snapshot" representation of a particular reality. Because of the

notion that data is inherently objective, we tend to believe data-driven conclusions more readily than other forms of knowledge (Fontichiaro & Oehrli, 2016). A data literate person understands this connection between data and reality and can identify gaps or discrepancies between them. Once those gaps are identified, they can reasonably suggest other pieces of information to complete a narrative or verify claims derived from a dataset. The ability to act when data is absent, and to understand the limitations of data-driven analysis, will continue to be highly desirable skills for all workers, not just those in DH (Davies, Fidler & Gorbis, 2020).

A data literate person understands this connection between data and reality and can identify gaps or discrepancies between them. Once those gaps are identified, they can reasonably suggest other pieces of information to complete a narrative or verify claims derived from a dataset.

The base data visualization in Torn Apart/Separados Volume 1 tells us that ICE-affiliated detention centers are widespread, which are in use, and some are not, the average daily population, and other characteristics. None of this factual information demonstrates how these centers can operate, a question which the project team set out to answer. Volume 2 analyzes the flow of money between ICE, government officials, and the contractors who complete work for them. This additional piece of information draws the story closer to a complete picture of the current state of immigration policy and enforcement in the US. A data literate person can effectively use the information in both Volumes 1 and 2 to draw correlations between operating costs and facility use, which was impossible without the new information Volume 2 provides. All of this information, from the data to the interpretations presented, are equally integral parts of the research process.

Data is Part of the Scholarly Conversation

Data is an artifact of the iterative process of research.

> Key questions for exploration:
> • What kind of data is being shared?
> • What steps are being taken to ensure the data is findable, reusable, and preserved?

In digital humanities projects, data can appear both as the subject and product of research. Considering Christof Schöch's distinction between "big" and "smart" data in the humanities is useful here, wherein big data is relatively unstructured but massive, and smart data is more structured and relatively small (Schöch, 2013). A dataset created by a DH researcher that is new, unique, and derived from multiple information sources is "smart" data. Like a published article, the dataset itself is an integral part of the research process. Findable, reusable, and well-preserved data ensures reproducibility and enables others to ask similar questions. A data literate person understands the flow of data from

original source, to researcher, to final presented dataset, and knows how to find information on how the data was modified and recreated at each stage.

Torn Apart/Separados Volume 1 visualizes structured data garnered directly from other sources on a map for exploration and interpretation (another example of "smart" data). The original data is gathered from various organizations, and the cleaned, reformatted versions are preserved on the project's GitHub repository. Project documentation explains the information in the dataset and its original sources. In this case, data is both the subject and product of research. A data literate researcher reusing or examining the project's data can easily find documentation on how the data was modified throughout the project and, thus, gains a critical understanding of the process of data creation, transformation, and presentation.

Next Steps

Understanding how data is created, data's capacity to be a form of knowledge, and data's role in scholarship are crucial for DH practitioners. These concepts are meant to serve as preliminary benchmarks to gauge learners' critical understanding of data creation, use, analysis, and sharing. As a community, we could potentially work towards an "interconnected core conceptual framework" for data literacy as a complement to the ACRL Framework for Information Literacy for Higher Education.

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Developing Literacies in the Digital Humanities Classroom: A Case Study

by Sarah Ketchley and Jared Nistler

Developing literacies in the digital humanities classroom include, yet transcend, the 'traditional' passive literacies of reading, hearing, and seeing into the active realms of finding, evaluating, creating, engaging and communicating with an audience that may extend beyond institutional boundaries. These skills have been presented as a theoretical framework by Yoram Eshet et al. (2004, 2006, 2012), amongst others. Their model has developed over time to include six digital literacies, generally categorized as technical-procedural, cognitive, and emotional-social:

1. Photo-Visual Literacy – Understanding workflows, instructions, and messages when presented in graphical formats; ranging from individual icons and symbols within a platform, to navigating an entire graphical user inter face (GUI).
2. Reproduction Literacy – Creating new meanings or interpretations from disparate information in various formats.
3. Information Literacy – Assessing large volumes of data objectively, dis counting irrelevant material while demonstrating an awareness of bias and/or falsehood.
4. Branching Literacy – Navigating a hypermedia environment, including complex or varied knowledge domains, while remaining oriented and focused on core research and learning tasks.
5. Socio-Emotional Literacy – Understanding the rules of effective, respectful, and sensitive engagement in an online environment, including a willingness to share knowledge while working and learning collaboratively.
6. Real-Time Thinking Literacy – Processing or interacting with real-time or high-speed digital data (less relevant in the context of an asynchronous class).

This model provides a robust framework for designing a course geared towards cultivating digitally literate students. This article will examine these interrelated literacies in the context of an online no-prerequisite introductory digital humanities course. The five-week asynchronous class was offered in the summer of 2019 through the Informatics Department at the University of Washington and was designed to help students develop an understanding of the digital humanities through the lens of text mining historical documents. Rather than a homogeneous group of Informatics students, the demographics of the class included a mix of thirty-one undergraduates and graduates from a diverse range of departments. Twenty-one unique majors were represented, from electrical engineering to business administration. Many from this group self-identified as

having little to no experience working with humanities data, text mining, or data analysis.

Our intent in writing this article is to provide perspectives on the pedagogical strategies and practical challenges of teaching and participating in the course, along with an assessment of the effectiveness of the syllabus in developing core digital literacy competencies.

Course Structure

The Canvas classroom was structured as five week-long modules with staggered release dates. Each module followed a logical but non-linear path that drew in resources from outside the LMS; students developed their branching literacies as they navigated the hypermedia environment on their own time, with content milestones defined by class submission deadlines. Varied pedagogical strategies were employed to meet the needs of a diverse group of learners, including written 'How-To' worksheets, tutorial videos created by the instructor and uploaded to YouTube, and tutorial videos created by product developers and uploaded either to YouTube or to the product's Help Center. Zoom office hours were also offered for those who preferred the option of in-person tutorials, but few students availed themselves of this opportunity.

An Introduction to Digital Humanities - Curriculum and Literacies

Module One	Module Two	Module Three	Module Four	Module Five
Orientation	Planning	Collecting, Curating, & Preparing Data for Analysis	Analysis & Visualization	Final Projects
Syllabus Review and Classroom Navigation	Evaluating Digital Projects	Creating a Digital Archive	Survey of Text Mining Tools	Exporting Analyses
Assessment	Copyright & Open Source Material	What is OCR?	Ngrams/Term Frequency	Mapping
Expectations	Risk Assessment & Data Management	Effective Searching	Named Entity Recognition	Developing a Compelling Narrative
What is Digital Humanities?	Digital Scholar Lab: Intro and Demo	Creating and Curating Content Sets	Topic Modeling	Hands-on Work and Support
	Intro to the Primary Sources Archives and Topics	Cleaning Text in the Digital Scholar Lab	Sentiment Analysis	Submit Final Project URL
	Building a Narrative with StoryMapJS	Exporting OCR Text	Clustering and Parts of Speech Tagging	
		Other Tools for Cleaning Text: OpenRefine; Lexos; RegEx	Compare with External Tools: Voyant	

Summer 2019 'Introduction to Digital Humanities' Curriculum

The class was guided through the process of navigating a digital platform for text analysis–the Gale Digital Scholar Lab–to build corpora or 'content sets' of relevant primary source material and to curate and analyze the collected data, before presenting research results in an accessible and engaging format for a hypothetical public audience. In doing so, and to complete the course and learning requirements, students developed and used a combination of five core

digital literacy skills detailed above in the *Introduction to Digital Humanities Curriculum and Literacies* infographic.

Mapping a Digital Literacy Framework to Course Tasks

Students were expected to identify a research question that they wished to answer using qualitative or quantitative text mining methodologies. The instructor provided a range of sample topics for the group to choose from since the range of archival material available to mine was extensive and potentially overwhelming within the short time-frame of the class. A few students had particular research interests they wished to explore, and were able to do so once they had mapped out the scope of their project appropriately. Repeating the build-clean-analyze-visualize process on multiple occasions, and across different platforms, helped reinforce this mental model for students, moving from an abstract concept into a defined workflow.

In order to gather the data necessary to answer their question, work in class combined 'traditional' linear search and retrieve exercises, using primary source databases to find relevant research material, set against a backdrop of a more iterative and cyclical flow of retrieving documents, evaluating and cleaning the OCR text, testing the cleanup using analysis tools, and returning to repeat the process if necessary. Students were required to evaluate and order considerable amounts of information from disparate sources in a short period of time. Repeating the build-clean-analyze-visualize process on multiple occasions, and across different platforms, helped reinforce this mental model for students, moving from an abstract concept into a defined workflow. This construction of knowledge from independent and unordered sources in a non-linear manner, coupled with multiple-domain thinking, exemplifies branching literacy.

The process of building a research dataset consisting of digitized primary source material to explore a chosen research question served to underscore the importance of sourcing relevant and usable data, and of developing information literacy skills. Many students drew on material from newspaper archives and needed to evaluate its credibility and bias. The constraints of the limited time frame required students to constantly define and redefine the scope of their project, including the size of their content sets, to ensure that their research focus was narrow, and data manageable and relevant. Similarly, in order to make informed choices about the documents they were working with, students learned about the process of creating digital archives and OCR texts, developing an awareness of some of the challenges of generating 'clean' OCR text as well as the factors that influence the OCR confidence level. The class quickly learned that no matter how they configured their text cleaning tools, an error-free OCR dataset was impossible to achieve. Accepting when a content set was cleaned to the degree that was "good enough" for the purposes of their projects was yet another lesson learned through experience working with the tools and guided discussion, and again involved developing branching literacy skills by iterating through the

process of examining OCR text, comparing with original sources, developing cleaning configurations, testing analyses, then returning to tweak configurations as appropriate.

While much of this workflow took place within the Digital Scholar Lab, students were expected to export OCR text and mirror the process using external tools to compare and evaluate the experience and their analysis results. Along with Canvas and the Gale Digital Scholar Lab, students navigated a number of digital platforms with different GUIs, including Lexos, Voyant, and StoryMapJS. Options were provided for students looking for additional challenges, including Open-Refine and Regular Expressions. Navigating these digital work environments required the development of skills related to photo-visual literacy, using intuitive-associative thinking to understand and interact with the visual messaging and workflow in each GUI. Later tasks would also involve this cognitive literacy, specifically the interpretation of visualized data and analyses created using these digital environments.

Assessing whether their research question had been satisfactorily addressed using a particular analysis method or tool configuration was an important factor in teaching students about the potential and the limitations of given digital tools, as well as the optimal parameters for creating significant results. For example, in investigating prevalent themes in their datasets, students used a topic modeling tool in the Digital Scholar Lab, experimenting with the number of topics and number of words per topic that the algorithm returned. When choosing a result of 10 topics, students often found that results were 'as expected' or 'unsurprising,' whereas choosing a higher number of topics often returned less obvious themes in the datasets. This type of iterative digital work encouraged the class to be thoughtful in their choice of configurations, and on occasion, led to interesting research results.

| |
|---|
| iraq iraqi british forces troops american government need situation time |
| policy terrorism invasion community second state terror target global alqaida |
| iraq blair prime war minister action tony power support britain |
| israel palestinian israeli state palestinians arab sharon gaza article return |
| letters london editor email sir number address independent july post |
| iraq war world saddam united bush middle peace east states |
| military evidence lord human reports week used rights abuse phosphorus |

Topic Modeling from Voyant running 25 topics with 10 terms for 2,000 iterations on 'The Independent' Content Set, a cleaned content set of 1,667 editorials from The Independent and The Independent on Sunday containing the keyword "iraq" published from 1991-2013.

More often, however, it led to analysis outputs that were either unclear or insignificant, which galvanized students into returning to their primary source data to adjust the size of their content set or to revise tool configurations and re-run their analyses. Additionally, the experience of seeing insignificant or inconclusive results underscored the fact that digital humanities analysis is primarily driven by the scholar using the tools, rather than the tools themselves. Interpreting and refining results engaged students in various literacies, including photo-visual, reproduction, and branching, as well as information literacy since analysis results occasionally brought to light outlying data that needed to be re-assessed for relevance.

Sentiment across all content set editorials from 1991 to 2013
sen_senteditorialclean_key_all_91+
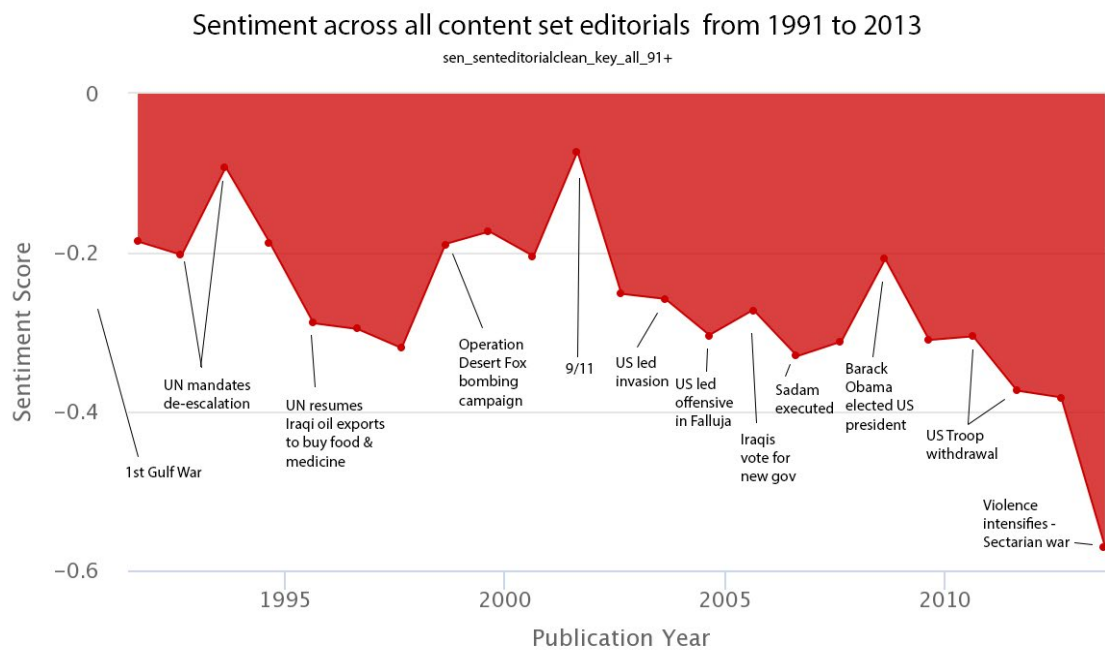
Sentiment Analysis in the Gale Digital Scholar Lab run on the Master Content Set comprising a cleaned content set of 3,478 editorials from The Economist, The International Herald Tribune (European Edition), The Independent, The Independent on Sunday, and The Times containing the keyword "iraq" published from 1991-2013.

Digital humanities projects are typically collaborative undertakings, but the disaggregated online classroom presented challenges to building an engaged learning community. A number of strategies were employed to create a "Community of Inquiry" whereby students were encouraged to regularly engage and interact among themselves and with the TA and the instructor. While most students are well-versed in the socio-emotional literacies of working in an online classroom and were willing to share, evaluate, and collaborate with information and data to create knowledge, nonetheless, class online etiquette was laid out during the first few days of class as a matter of best practice. The discussion board in Canvas became the main gathering point for class brainstorming and communication. Specific expectations for these discussions included student responsibility for asking thoughtful questions of each other, offering encourage-

ment, sharing experiences, and generally driving the learning forward. The class was also expected to share user feedback about the platforms they engaged with, an exercise that was intended to prompt critical thinking about the digital environments they were working in. This process involved drawing on their own experiences and expectations for interacting with websites and digital tools as a basis for evaluation. Furthermore, concepts from foundational digital humanities texts and projects were brought into the conversation to provide broader perspectives intended to shape how the class viewed their ongoing projects. For example, Ben Schmidt's blog post "Machine Learning at Sea" (2012) provided an in-depth case study of how clustering can be applied to text-mined datasets. After reading and discussing this work, students found themselves better understanding the sort of questions these tools can answer and began conducting more comprehensive exploratory analyses with similar techniques. This additional work was not conducted to fulfill specific requirements of the course, but rather as required to fully realize the vision they had for their final projects, within the context of the ongoing development of each of the five digital literacy skills.
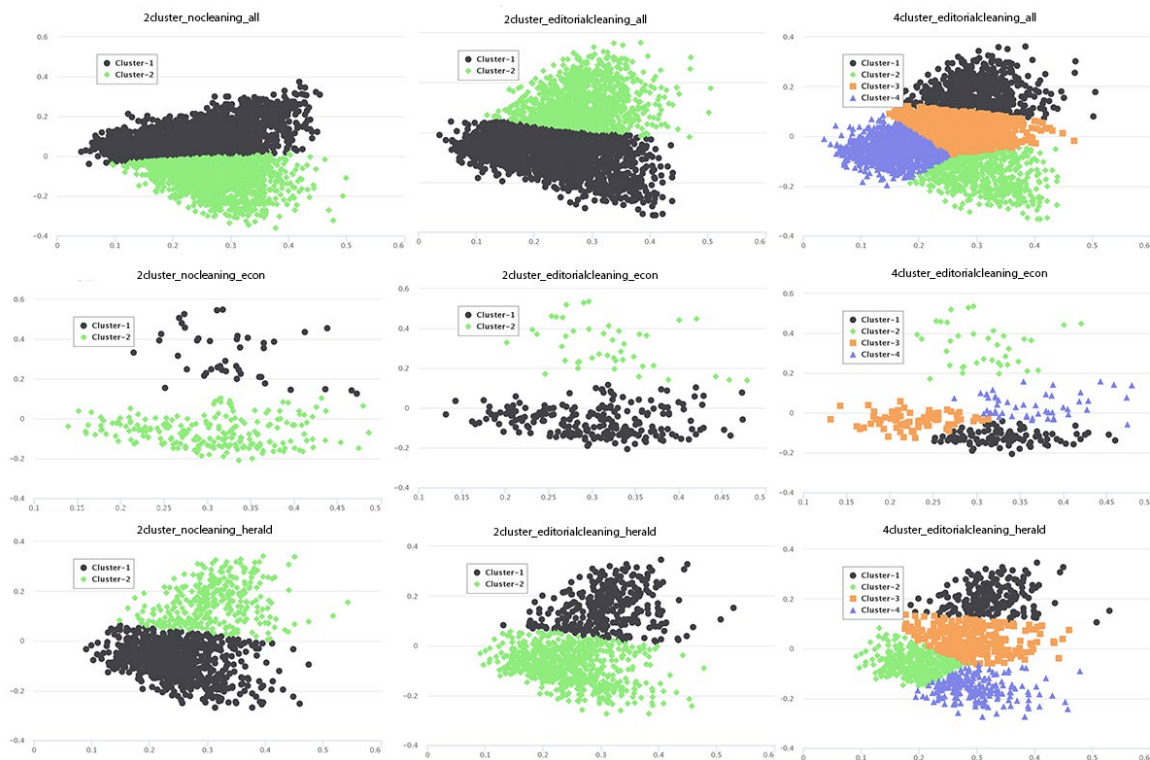
K-Means Clustering from the Gale Digital Scholar Lab on multiple content sets. The first column is uncleaned two clusters; second column is cleaned two clusters; third column is cleaned four clusters. Each row is a different content set. Example of inconclusive and not helpful analysis.

Final Projects

The final project was an exercise in photo-visual communication and reproduction literacy, in the sense that students were engaged in 'the creative recycling of existing materials'. While this process occurred on a smaller scale throughout the

course, for their final projects, and in lieu of a traditional written exam, students created an annotated interactive slideshow (a StoryMap) to present the outcomes of their research. While the structure of the exercise was defined by a detailed project rubric, the choice of images, narrative, and visualizations was the responsibility of the student. That the curriculum had been effective in providing a scaffolded experience for students to develop the five core digital literacy skills was demonstrated by the depth, breadth, and content of final projects which included:

a title slide with a high-level overview of the topic and appropriate imagery,
a compelling and logical narrative highlighting the main research points,
a summary of the archival resources used to build content sets,
a description of the process of data curation and cleaning, which students had documented by keeping detailed work logs,
a summary of each of the text mining analyses students carried out with an assessment of which was most useful for answering their research quetion,
at least one visualization and analysis result with a discussion about tool configuration choices and consideration about how meaningful the research results were,
a learning summary to encourage students to reflect on the skills they had earned and used in the class,
a bibliography.

StoryMapJS Cover

The range and quality of the work speaks to students' high level of engagement

with both the historical primary source material and the digital tools for text analysis. The projects provide a benchmark for assessing the effectiveness of the curriculum in developing digital literacy skills, while at the same time delivering a worthwhile educational experience. Over thirty final student projects are available at Newbook Digital Texts. The course will be offered again in Summer 2020 with a few workflow tweaks to further expand opportunities to develop the core technical-procedural, cognitive, and emotional-social digital literacies described in this article.

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Credits

Content sets created by Jared Nistler.

Photos: Curriculum infographic, visualizations, analyses, and StoryMap cover created by Jared Nistler.

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Towards an Electrate Library

by Jason Crider and Wesley Smith

At their core, libraries offer participatory learning environments geared towards optimizing the potential for the creation and distribution of knowledge, a paradigm developed around traditional concepts of literacy. Libraries traditionally facilitate literate practices; they are institutions by which patrons can locate, contextualize, contribute to, and create information. However, with the continued proliferation of digital technologies, our notions of literacy—of how institutions assess informational fluency or aptitude—are being challenged. Digital literacy has become a hotly debated buzzword in both corporate and educational settings, often used as a stand-in to mean everything from communicating in digital environments to creating digital artifacts. These conversations seldom account for the actual institutional or pedagogical needs to address the dynamic, associative qualities essential to digital media. Discussions in the digital humanities, on the other hand, often hinge on what effects digital media and methods have on the liberal arts, and what liberal arts disciplines have to offer to studies of digital media. Like all new inscriptive technologies, digital media practices fundamentally disrupt our traditional paradigms of authorship and research, which require new theories and methods in order to maximize their rhetorical potential and educational outreach.

For the library to continue to best serve the educational needs of a rapidly evolving, technologically mediated public, it might be time to rework the concept of digital literacy into less ambiguous and more generative terms. In a recent blog post for Adobe, Sid Dobrin argues that we seldom account for the complexity of digital literacy and that it might be more advantageous to break the term up into terms like digital competency, digital proficiency, and digital fluency. Dobrin offers this "fractured definition" as a means of getting at much more specific educational goals that can, in turn, be more directly addressed, suggesting that literacy within digital contexts means vastly different things to different people. If we consider that literacy traditionally referred to the ability to read and write print media, it might be worth abandoning the term altogether, rather than trying to force a literacy 2.0.

Media studies scholars have long examined the operational shifts that occurred in Classical Greece when the oral culture was augmented with the invention of writing and print. Writing fundamentally transformed the way we interface with information and culture and, thus, required the invention of an apparatus—what we now call literacy— to cultivate and refine the skillsets necessary to realize its full communicative potential. Literacy facilitated the basic tools for a scientific worldview, radically altered notions of the self and democracy, and laid the foundation for our modern relationship with information and knowledge. And of course, Classical Greece also played a crucial role in the development of the

early library, which opened the door for new practices in art, law, medicine, and education.

As Gregory Ulmer argues, while we once moved from orality to literacy, we are now moving from literacy to what he calls electracy. According to Ulmer, electracy—a portmanteau of "electric" and "literacy" combined with Derrida's notion of trace—is "to digital media what literacy is to print," and describes the larger ideological, ontological, institutional, and cultural reinventions necessary for utilizing the full potential of digital media. Ulmer posits that referring to electracy as "digital literacy" is the equivalent of referring to science as "nature magic"; we might also consider that we don't refer to "literacy" as "written orality." If we consider the role of the Academy and Library as epicenters of literacy's successful proliferation, as institutions that shaped and were in turn shaped by the technologies of writing and print, electracy asks how these institutions' roles might transform in relation to the emergence and evolution of digital technologies. Rather than forcing digital media to function according to the same logics and poetics developed for and from print technology, electracy opens up an invitation to create new inventive potentials that better address the affordances and constraints posed by digital media.

The library should continue to play a growing role within the emerging forms of thought beckoned by digital technologies, and electracy offers a potential model for institutional adaptability. Organizations such as the American Library Association (ALA) and the Association of College and Research Libraries (ACRL) have long played an integral role in shaping what academic libraries, universities, and their patrons view and understand as literacy. The ALA released its recommendations on digital literacy in 2013, an attempt to ensure that "libraries of all types—school, academic and public—play a vital role in ensuring all people have the skills and abilities to succeed in the Digital Age." And the ACRL moved from prescriptive information literacy standards to the information literacy framework as an attempt to adapt to issues brought forth from digital technological change. Early attempts at leveraging digital media in this way, such as the Library 2.0 movement with Web 2.0, often provided mixed results, and adapting electrate practices might help such successes create adaptive frameworks to account for further technological developments. But in the short time since then, our definitions and understandings of the "digital" have already undergone a massive change. As these organizations continue to make moves to better account for digital theories, methods, and practices, there is massive potential in considering the history of literacy in terms of its development out of orality as we now face the emergence of a new apparatus.

In Heuretics, Ulmer reminds us that literacy is formed around topoi or topics. In Ancient Greece, topoi translated roughly to "commonplace," and represents identifiable starting points for argumentation, and a way of approaching ideas from different angles. For electracy, Ulmer argues that we should adopt chora,

an Ancient Greek term that represented the area outside of the polis, or city proper, what gave the city its form—chora is the non-space that gives topoi its space. In other words, rather than focusing strictly on topical, rigid structures, electracy might help us to reconfigure knowledge creation in a way that more closely mirrors the associative image logics of digital, networked media. An electrate library recognizes the interstitial space between topoi and chora, how the two influence one another in the creation and contestation of meaning, and the necessity of inventing practices better suited to this emergent paradigm.

Electracy does not replace literacy but creates new potentials for digital media by foregrounding inventive, born-digital practices, rather than enforcing restrictive holding patterns bound up in simply interpreting and taxonomizing digital artifacts. If the library's success as an institution stems from its foundation in an ontology of print media, what stands to be gained if we expand that to include ontologically digital practices and ways of thinking? Such an operational shift creates an opportunity for us to challenge and help shape the future of libraries and the digital humanities.

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Information Literacy as a Framework for the Digital Liberal Arts

by Craig Dietrich, Christopher Gilman, Darren Hall, and Jacob Alden Sargent

Occidental College (Oxy) is a small residential liberal arts institution with approximately 2,000 students located just north of downtown Los Angeles. Over the past several years, Oxy's Center for Digital Liberal Arts (CDLA) has used the ACRL Framework for Information Literacy for Higher Education to connect innovative digital project work with explicit learning goals. In its 2016 update, the ACRL expanded its definition to account for more active student roles:

> Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning. (ACRL Framework 2016:8)

The Framework—with its 6 non-hierarchical frames, reference to "metaliteracies,"(1) and grounding in Wiggins and McTighe's "Understanding by Design" (UBD) approach to curriculum development (2)—has tied our work to an accepted tool for assessment and accreditation and provided us a way to better communicate the pedagogical value of digital project work. The Framework has thus become a means to structure project-based digital assignments in the undergraduate classroom, including 1) collaboration among librarians, faculty and students in lesson design; 2) working "backward" from learning goals to assignment components; and 3) emphasizing the role of students as producers and distributors of knowledge in multiple modalities (e.g., visual, textual, archival, geospatial, data).

Digital Humanities (DH) Tools and Methods

In this article, we will outline and describe examples of our efforts to use and adapt several digital platforms, including Scalar (3), a born-digital, open source, media-rich, publishing platform, and our own site-specific content management and digital display system, Global Crossroads, a media-resource sharing platform and associated two-story media wall installation in our global affairs center.

These platforms allow for students to create collaborative, or individual projects that build upon shared content sets, and display their work to audiences of peers in specific spaces on campus. They require students to consider authorship, attribution, metadata, and content creation in a context that combines traditional academic practices of citation with emergent practices of content sharing online. As we have applied these tools in the undergraduate classroom, the ACRL Frames provided us with a language for identifying learning goals with faculty and a way to articulate the pedagogical value of working with new modes of information sharing.

Global Crossroads in the McKinnon Center for Global Affairs, Johnson Hall. Sept. 17, 2014 (Photo by Marc Campos, Occidental College Photographer)

From Reflective Discovery of Information to Strategic Exploration

The use of digital tools to surface information literacy issues and cultivate the knowledge practices and dispositions outlined in the Framework is exemplified by Jacob's experience in teaching a first-year writing and research course entitled "Liberal Arts at the Brink," in which he asked students to search online for data visualizations related to the rising costs of a college education. As students imported their findings into projects displayed on the Global Crossroads media wall, they discovered, to their embarrassment, that many other students had chosen the same item. As it turned out, they had all typed "cost of college" into Google Images. The phrase they used was derived from the assignment prompt, which asked about the potential factors driving the increased costs. Upon reflection, some students were able to see that the visualization was not related to reasons for increased cost, but only about cost over time. Others began to ask how to cite sources when they noticed some listed The Guardian and many others simply "Google Images." Students faced obstacles in their understanding of standard practices of search and yet by displaying their search and citation choices on the media wall installation, they were able to see those limitations for themselves. Here the importance of the knowledge practices and dispositions of the frame Searching as Strategic Exploration was brought to the fore and could be fruitfully opened up for collective discussion.

Student Example 1: Common data visualization based on Google Images keyword search

Example Student 2: Common data visualization based on Google Images keyword search

This moment crystallized for us the potential of digital displays and content management systems for a new approach to teaching information literacy--one that was not about admonishing students. Instead, these tools could help students see their own agency in scholarly content creation, collection building, and accurate metadata entry. As we supported courses across the liberal arts curriculum, we sought multimodal (i.e., visual, graphic, geospatial) digital platforms to make the student research process visible. On-site screens provided more immediate communities than amorphous audiences "out there" as we once imagined in the early days of web 2.0 and student blogging, that is, viewers who were engaged in similar research questions, be they other courses, community-based research projects or networks of undergraduate digital humanities researchers.
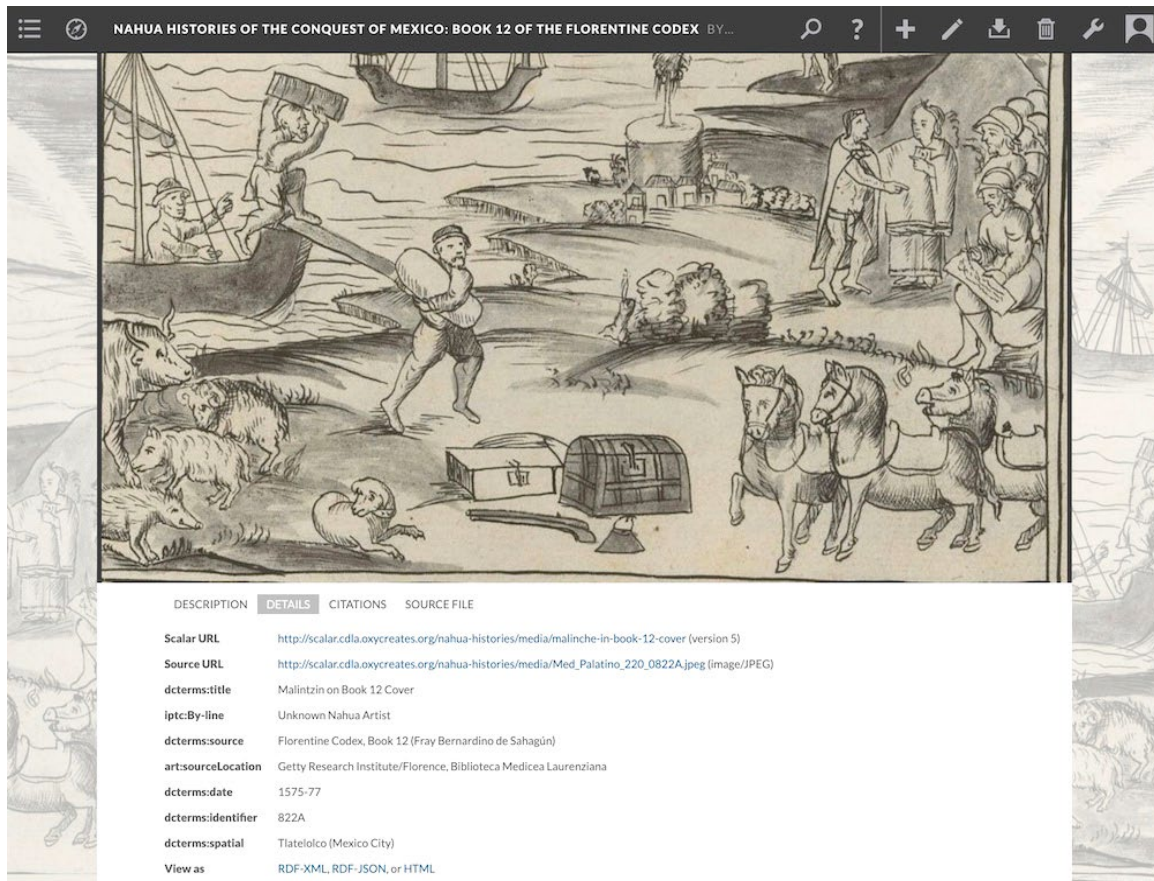
From Understanding How Information is Produced and Valued to Scholarship as Conversation

Scalar workshop in the library instruction classroom for HIST 355

In addition to their showcasing functions, Scalar and the Global Crossroads web applications have the capacity to engage students with curated source media in small, thematic collections shared by all participants. Given the affordances of the technology, we adopted a curriculum-design strategy of "collections-based research," or CBR (4). We worked with faculty and within our own courses to create sets of content related to an exhibition on "Black Arts at Oxy" in 1971; queer archives in Los Angeles; film and television representations of the author Cervantes; the Spanish/Najuatl Florentine Codex; Russian avant-garde artist books. By constraining media content in shared sets, we replaced the more common

curriculum design model based upon sequential topics and reading lists. The delimited conceptual and material terrain of a given project let students examine original cultural artifacts in-depth, and left time for foundational scholarly practices traditionally associated with librarianship, such as sourcing, selection, juxtaposition, sequencing, metadata, and usage rights.

Example of metadata fields for a resource from the Florentine Codex

These kinds of course-long projects led us to emphasize the ACRL frame "Information Creation as a Process" in the delivery of "digital scholarship labs" and library sessions, where students become contributors to knowledge, opening up possibilities for critique and analysis of what constitutes knowledge. In the case of HN Lukes' project The Grit and Glamour of Queer LA Subculture, students explored metadata in their course examination of what constitutes an "archive." In collaborative projects with faculty, students began to utilize digital platforms like Scalar to represent histories that have been outside mainstream scholarship and to ask ethical questions about marginalized or vulnerable populations. In a similar example for a course on the Spanish/Najuatl Florentine Codex, History Professor Lisa Sousa led a remarkable discussion about metadata and students paused for the duration of a lab period to interrogate whose voices and interests should be represented in the names and other information typed into metadata fields, requiring them to think through and make decisions about how to categorize knowledge and content when those are contested spaces due to colonial

oppression of indigenous cultures. This became an empowering and liberatory process for students and a key space for opening up discussions about representation, criticality, and visibility that resonated with the aims of digital humanities and information literacy.

From Participating Ethically in Communities of Learning to Information Creation as Process

We also continue to advocate for and develop digital platforms that create new and intentional spaces for scholarly conversation among students, faculty, and the communities they study. In partnership with Oxy's Institute for the Study of Los Angeles (ISLA), the Library's Special Collections, Oxy Arts, and the Center for Community-Based Learning, we worked with students in Professor Jeremiah Axelrod's first-year seminar course to collect stories from local community members who helped shape the cultural landscape in Northeast Los Angeles over the past 70 years. Students learned disciplinary-specific practices related to oral history, including the importance of reciprocity with community partners. Student involvement in this sort of research introduces them to the practice of ethical participation in communities of learning, a key component of the Framework's definition of information literacy.

Gallery goer interacts with oral histories inside Scalar on mounted iPad

With its multimedia affordances, Scalar served as an appropriate way to aggregate audio recordings and transcripts, which were displayed on wall-mounted iPads as part of the inaugural exhibit of the Oxy Arts gallery. By using Scalar with the Internet Archive, this project also introduced students to the interaction between information platforms and helped them gain an appreciation for their respective values. Audio recordings made by students were uploaded to the

Internet Archive along with detailed metadata, and then these audio files were embedded in the Scalar exhibit. Because of the intended public audience for Scalar, the metadata for the embedded media was intentionally suppressed so that gallery visitors would not be overwhelmed. This sort of process of working in multiple platforms helps develop the disposition "that different methods of information dissemination with different purposes are available for their use," another aspect of the Frame "Information Creation as a Process."

Conclusion

Digital Humanities is often viewed as being a domain for researchers with advanced technical proficiencies and, thus, may seem too daunting or, worse, irrelevant for undergraduate course activities. In our experience, however, these sorts of projects can be extraordinarily fruitful ways to teach information literacy when careful attention is given to assignment scaffolding and learning objectives are tied to Information Literacy Frames. Bringing the Frames to bear on the projects significantly lowers the threshold for faculty buy-in and willingness to expand their repertoire of pedagogical tools.

Notes

[1] According to Jacobson and Mackey's Reframing Information Literacy as Metaliteracy (2011): "Metaliteracy is an overarching and self-referential framework that integrates emerging technologies and unifies multiple literacy types. This redefinition of information literacy expands the scope of generally understood information competencies and places a particular emphasis on producing and sharing information in participatory digital environments."

[2] Wiggins, Grant and Jay McTigh (2005) Understanding By Design. Association for Supervision and Curriculum Development. Arlington, VA.

[3] Although Scalar was originally optimized for advanced individual research publications, we re-purposed the tool for curricular settings, with up to 30 student authors in a single publication, or "book," over the duration of a semester. The logistical challenges of project management and troubleshooting student user experience with the software in scaffolded incremental learning activities provided the basis for identifying conceptual obstacles that resonate with Wiggins and McTighe's UBD.

[4] The seminal notion of a source "archive" of rich media content at the heart of Scalar's design, as well as its recombinant features, can be traced to Marsha Kinder's theory of "database narrative." See e.g. her "Hot Spots, Avatars, and Narrative Fields Forever: Buñuel's Legacy for New Digital Media and Interactive Database Narrative." Film Quarterly Vol 55, Issue 4 Summer 2002.

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Wielding A(rden) Club for IL: The Symbiotic Relationship Between DH and IL

by Rebecca Eve Graff, Emily Grubbs, and Emma Annette Wilson

Introduction

Information literacy is at the heart of digital humanities. Key to all successful digital humanities projects is a robust data structure or approach to data analysis, which goes hand in hand with a good grasp of the fundamentals of information literacy: understanding where information comes from, how it is constructed, that it is constructed, and that it has value.[1] Digital humanities projects in the undergraduate classroom offer great opportunities for students to break new scholarly ground, either by being the first to apply techniques such as digital mapping or text mining to analyze a particular text or topic in the humanities or, as in this project, by becoming information creators in their own right, using digital techniques to build an online exhibition of archival materials which have not been examined before. In order to build an online archive, students must engage in detailed critical research, thereby actively learning about the process of information creation, and also becoming participants in a scholarly conversation in order to justify their own research discoveries in the public forum of a website. Our collaborative team, a faculty member, archivist, and subject librarian, were charged with creating an introductory digital humanities course in the Department of English, and we used the ACRL's Framework for Information Literacy for Higher Education to construct student learning outcomes that harness the powerful reciprocal relationship between information literacy and digital humanities to empower students to become better consumers and creators of information. [2]

This essay depicts our choices in developing course content, shares discoveries about the relationship between IL and DH, and provides a blueprint for assignments that could be adopted and adapted by instructors at other institutions who are seeking to enhance both IL and DH pedagogy.[3] This approach can serve as an effective model for engaging more critically with digital humanities as part of course design.

Project Overview

For their projects, students in English 2318, Introduction to Digital Literature, conducted original research on the Arden Club, Southern Methodist University's original student drama group, using documents from the university's archives. They constructed a public-facing digital archive of the documents by creating metadata to aid in accessing and analyzing their archival information and published their own research essays addressing elements of the primary documents.

Investigating Archival Information

Preparation by the archives department began early in the semester prior to

the course offering in order to have all archival items pertaining to the Arden Club ready. The class was comprised of 18 students from a wide range of fields, encompassing everything from Business to Music Performance to English, and one of the beauties of the available archival materials was that there were at least one or two items which intersected with each of these varied fields. Preparation beforehand involved careful filtering and selection of viable materials for students to work with. We selected programs, photographs, and the Club's meeting minutes, along with other materials documenting the Club's history items, and divided the materials into folders by academic years (theatrical seasons), each year containing 10 items of various mediums so that the students would each be able to work with a variety of materials. These selected archival items were rehoused in a separate archival box to expedite access during class and research sessions. Note, this collection in its entirety remained available for research throughout the semester, careful documentation was kept regarding the location and description of each item used by the course. In order to allow students to provide some peer-to-peer support in what was going to be a very new and potentially intimidating process, we asked that they sign up in pairs to be responsible for researching and documenting the materials from a particular year, meaning that each student would document approximately 5 items for the digital exhibition. The selected items were digitized by SMU's Norwick Center for Digital Solutions (NCDS) and placed on a campus file-sharing site for the students to access throughout the semester. Though the students did not perform the digitization for all the Arden Club materials, we did introduce them to the process in specially-designed hands-on learning sessions to give them a sense of the full life cycle of a digital humanities project.[4]

In the archives, after a class session introducing special collections to the students and a tutorial on care and handling, students delved into the realms (and reams) of original research. They quickly engaged with the detailed material and connected with campus history.

Metadata

A customized metadata schema was used to document the Arden Club materials for the website, enabling students to collect both basic information such as the date of the item, and its type, and also more specific data such as the theatrical plays being referenced within it, and local organizations involved (e.g., companies who might sponsor advertisements in play programs). The idea of researching and then presenting that original information in a regular, standardized way was new to the students, and in itself provided a valuable lesson in how information creation is a process. Creating metadata proved more difficult than expected in our initial iteration of this course, so in the second iteration we added exercises to build these skills, including reverse-engineering metadata in existing digital humanities projects, and exploring controlled vocabularies in various disciplines[5]. Students also developed descriptors for a searchable candy database, to help them visualize searching and internalize (literally) the

difference between subject and keyword searching. One of the course's central ideas about the importance of data structures and, when possible, making those consistent.

Several in-class research sessions inculcated students' curiosity about metadata details and historical context, such as questions regarding the Club's meeting minutes, which were handwritten. For materials from the 1910s to 1930s, the penmanship was largely unfamiliar to our students, and transcription proved a really valuable point in prompting additional sideways research to decipher words and names in these documents, cultivating resourcefulness, a cornerstone proclivity of information literacy.

From Archives to Information Architects

As part of this process, students examined information repositories and considered designers' decisions. Then, by publishing their own content in a public digital project, the students themselves became information architects, actively engaging in and having to make the same kinds of decisions as were made in the creation of the resources they evaluated. As creators and curators, students applied principles of responsible information creation and management. By empowering students to act as information authorities, DH has a unique relationship with IL that has the capacity to enhance both fields.

Searching for Secondary Sources

Searching as strategic exploration framed the approach of determining what secondary sources they would need. Since the students determined what to investigate about the artifacts, the subject librarian decided that they should help create the course guide. After examining the syllabus, she brainstormed likely sources and source types, such as biographies, newspapers, etc. In class, students determined the specific sources selected and how we described them, to ensure that they could navigate the guide on their own. The close collaboration continued for several sessions to give guidance to students engaged in this research process, giving students a realistic sense of what it means to be a professional researcher in pursuit of your own research question, and how to leverage the resources available to you.

This is how the ACRL pillars of information literacy informed student learning outcomes:

• *Authority Is Constructed and Contextual*
Students applied skills from their information literacy workshops to evaluate a digital resource and they learned to question the authority of the resources with which they worked. Perhaps the most distinctive element of this assignment is that in the third stage, when they became authorities, offering unique scholarly contributions in their essays about SMU's Arden Club.

- *Information Creation as a Process*

The very essence of information creation as a process is modeled by design in this multi-stage assignment. In tandem with this experience, they learned about the process of digitization and metadata creation in collaboration. This hands-on work gave them direct experience of the decisions involved in the process of creating and disseminating information. They will never look at a website or digital database the same way again!

- *Information Has Value*

The hard-grind of conducting intensive archival research and the necessary follow-on secondary research to substantiate and explicate archival findings, as well as mediating those findings for a public audience, gave students a full appreciation for the value of information and the process involved in its creation.

- *Research as Inquiry*

The foundation of this course is research as inquiry. Students engaged in intensive archival exploration. Then they researched items relating to those materials, selecting representative items to digitize. To present those digitized items, students needed to engage in extensive further research about the history and context of each item which they were going to document, sending them on a quest to track down as much contextual information about their topic and items as possible with the collaboration of the instructor and subject librarian.

- *Scholarship as Conversation*

At the end of the semester, students gave testimonies about their experiences in the course. Unprompted, each person spoke up to say that this class gave them an "aha!" moment in terms of understanding the point of scholarship, engaging with ideas, and creating new knowledge to which others would add.

- *Searching as Strategic Exploration*

Through workshop sessions, they learned how to think about finding information, where they could get help, when to persevere with a search process, and, crucially, when to stop. Moreover, the process of doing hands-on original research in the archives and secondary sourced based research using the main library's holdings and databases allowed students to understand the value of digital humanities.

Extending The Relationship Between Digital Humanities and Information Literacy

The core of the Arden Club Digital Archive teaching project engaged metadata research and creation as a way of helping students to learn, first-hand, both the precepts and the values of information literacy as defined by the ACRL's pillars. This approach provided students with a really good foundational understanding of the research process, and of their role in both consuming and also producing information. However, the relationship between digital humanities and information literacy extends beyond these fundamental parameters when students encounter techniques such as digital mapping and text mining. These were tech-

niques that students in this introductory course had a chance to experiment with for their final project, and in both instances, students had to confront their role as information creators and information authorities. In a number of cases, students chose to extend their Arden Club Digital Archive work for their final project, and their findings are testimony to the ways in which digital humanities can allow experiential learning of information literacy precepts.

Henry Cohanim, one of the students quoted in this article, opted to use digital mapping with Google's MyMaps to locate businesses that he had discovered to be sponsoring one of the Arden Club's performances, Bury The Dead, in 1936. He researched the companies sponsoring the play to find out their locations and then went in person to visit there today, taking pictures as he went, and then proceeding to create an interactive digital map depicting these points 'then and now'. This project is a great example of someone thinking about their role in information creation: he felt that in order to engage readers with the detailed and meticulous research he had done to find these companies, and to make them come to life in the present day, a narrative approach would be effective in which he imagined a hypothetical day which a student at SMU in 1936 might have had, visiting each of these businesses in the lead-up to attending the Arden Club's play. This was a decision which Cohanim took very seriously: how do you imaginatively inhabit the past without imposing too much upon it? How do you make the past speak whilst retaining accurate information?

Another student quoted here, Alix Sommers, discovered a diary in SMU's University Archives from precisely the years in the 1930s when she was investigating the Arden Club, and for her final project, she undertook to make a map of the places and incidents recorded in the diary. She annotated her digital map with quotations from the diary, and with some pictures, she found in SMU's Archives of the diarist, Doris, and when she presented her work to the class it was clear from the slew of engaged questions that everyone was really captured by the micro-history which she brought to life. This was a different way of harnessing her role as an information creator, as she had to juggle the use of a modern digital mapping tool with the authentic presentation of Doris' words from the 1930s, and creating a harmonious balance between the two was a great way of thinking about how research can act as a conversation not only with our peers or with fellow researchers, but also with people from the past from our communities.

Our Success Story

The results were striking: the quality of virtually all student papers in this assignment was markedly high, with each person genuinely investing in the process. Students' engagement was demonstrable, for example: deciphering difficult-to-read early twentieth-century handwriting to follow the work of the Club's secretary through the year in 1921-1922; looking through hundreds of pages of The Dallas Morning News' digital collection to find the three mentions of the person whose name caught their eye in a play program; finding a diary that was

serendipitously deposited in the University archives during the semester that documented life at SMU in the 1930s; tracing the names and locations of businesses that sponsored the Arden Club productions in the 1930s, and visiting those locations today; discovering that their erstwhile sorority sister from the 1920s was a key player in the Arden Club, and using their sorority archives to augment their research.

Students pushed themselves to make discoveries, to research things they would never otherwise have realized worthwhile, and to think about how best to share that research with the public, a key life skill.

An Ongoing Process

So far, we have documented the Club's earliest years. The project will continue to grow as subsequent classes explore the archives. The Arden Club Project was always conceived as an iterative one, with this first-class setting up and establishing the pattern of information and research which would then be carried on by subsequent cohorts. There was overhead in the initial setup of the course, but the fact that it has already iterated repays that investment. The in-person, hands-on support provided during multiple class sessions with energy, excitement, and expertise deemed indispensable by virtually all of the students.

This Will Work for You

It was the combination of being empowered to do their own original research, knowing that they were dealing with materials that few other researchers had examined, but also having collaborative support and guidance through the different phases of the research process that made this project so successful.

Having manageable chunks of research allowed students to be invested in this choose-your-own-adventure assignment. Moreover, the phased research process guided students in the development of their information literacy dispositions. It was applied information literacy, and all of the students were very vocal in saying how this empowered them both academically and in their lives beyond the classroom.

Footnotes

[1] John E. Russell and Merinda Kaye Hensley have discussed how digital humanities pedagogy can offer effective ways of thinking actively about choices made in information creation, generation, and analysis; 'Beyond buttonology: digital humanities, digital pedagogy, and the ACRL framework,' *College and Research Libraries News* 78.11, p.558 (2017), doi: https://doi.org/10.5860/crln.78.11.588. Steve Kolowich likewise discusses the ways in which digital humanities can enhance information literacy: 'Behind the digital curtain: Could weaving the digital humanities into undergraduate education help improve students' information literacy?', *Inside Higher Ed*, 27 January 2012, https://www.insidehighered.com/news/2012/01/27/could-digital-humanities-undergradu-

ates-could-boost-information-literacy

[2] Janet Hauck highlights the importance of collaboration and true partnership in these kinds of teaching initiatives; see 'From service to synergy: Embedding librarians in a digital humanities project', *College and Undergraduate Libraries* 24.2-4 (2017), p.434-451, doi: https://doi.org/10.1080/10691316.2017.1341357 . Melanie Griffin and Tomaro I. Taylor similarly discuss how partnerships in digital humanities pedagogy can redefine the traditional library liaison role: see 'Shifting expectations: Revisiting core concepts of academic librarianship in undergraduate classes with a digital humanities focus', *College and Undergraduate Libraries* 24.2-4 (2017), p.452-466, doi: https://doi.org/10.1080/10691316.2017.1325346.

[3] Anne Jumonville has discussed information literacy as a way of enhancing humanities instruction: 'The humanities in process not in crisis: information literacy as a means of low-stakes course innovation', *College and Research Libraries News* 75.2 (2014), p.84-87, doi: https://doi.org/10.5860/crln.75.2.9072.

[4] Susan Powell and Ningning Nicole Kong have suggested that in-depth instruction can be a good opportunity for libraries to engage in digital humanities: 'Beyond the one-shot: Intensive workshops as a platform for engaging the library in digital humanities', *College and Undergraduate Libraries* 24.2-4 (2017), p.516-534, doi: https://doi.org/10.1080/10691316.2017.1336955.

[5] To reflect the varied majors within the classroom, the digital humanities projects whose metadata we reverse engineered included Mill Marginalia Online (https://millmarginalia.org/), the Isabella D'Este Archive (IDEA) (http://isabelladeste.web.unc.edu/), and Charles Darwin's Library (https://www.biodiversitylibrary.org/collection/darwinlibrary).

[6] With thanks to our students Henry Cohanim, Alix Sommers, and Mallory Vroegh for their time in sharing their reflections upon the course with us.

See appendix

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Technical Librarians as Threshold Guides in Digital Literacy Instruction

by Colleen Farry

How does a non-instruction librarian leverage their distinctive technical knowledge to encourage transformative learning in the digital humanities? I started to contemplate this question in my second year as a digital services librarian, a role in which the responsibilities are primarily technological not instructional. Managing my library's digital collections and related digital projects, my day-to-day work and research focused on information systems and how information is structured, classified, described, and shared. My colleagues in the library were sustaining a robust and successful information literacy program, but I did not initially consider how my knowledge of information systems could contribute to those efforts.

Though not an instruction librarian, I was regularly invited to give lectures to history courses on the topics of digital archives, web archives, digitized primary sources, and the role of technology in historical research and scholarship. Undergraduate students in 100 and 200-level courses (including "Digital History" and "Craft of the Historian") were studying techniques for historical research and writing, and their coursework involved evaluating and collaborating on digital humanities projects. Whether an online exhibition, a digital collection of archival records, data visualization, or web publication, these projects asked students to think about how technology can be used to generate and share scholarly knowledge in digital formats and environments.

I began to consider whether my skills-based approach to instruction was providing students with a critical awareness of information environments and the structures within them. I prepared my lectures with no prior experience in the development of an information literacy lesson plan or a deep knowledge of pedagogical methodology in information literacy instruction. My presentations were structured with a skills-based approach to teaching students about digital archives, focusing on how to navigate and effectively search within a platform. My discussion also covered the labor behind a digital archive, an explanation of metadata and its purpose, and the decision-making involved in the digitization of primary sources. The goals of these sessions, as I understood them to be from the course instructors, were to introduce students to online repositories for finding primary sources and to instruct them on how to effectively search within these types of platforms. From the faculty members' perspectives, my lectures were successful in accomplishing the desired learning outcomes.

Following these sessions, I began to consider whether my skills-based approach to instruction, which focused on information retrieval, was providing students with a critical awareness of information environments and the structures within

them. Likewise, my post-lecture support of digital humanities projects involved consulting on tools, processes, and presentation, rather than encouraging a methodological understanding of the choices behind information systems. As a technical librarian, I was working to advance technical abilities and develop functional proficiencies with tools and interfaces, but I wasn't fostering metaliteracy of organizing systems in digital environments. In prioritizing a skills-based approach, I might have been missing an opportunity to encourage a transformative learning experience that goes beyond superficial knowledge and moves towards a deeper critical understanding.

To promote deeper learning, in subsequent semesters I shifted my instruction away from a lecture format to an active learning approach. I asked students to work in small groups on a digital humanities assignment. While the digital humanities covers a wide range of scholarly activity, these sessions focused on digital libraries and digital publishing which were explored through the development of a small online exhibit with the tool Omeka. Using resources from our library's digital collections, I asked students to 1.) define a topic for their exhibit, 2.) select primary sources on that subject, 3.) arrange the items in Omeka, and 4.) apply metadata to each object. This was a one-off pedagogical exercise that the students performed as a group. Some of the objectives of these sessions were to reveal the technical and social elements of organizing systems, introduce students to the notion of bias in their choices, and demonstrate the inherent imperfections of information systems. I asked students to discuss why they included or excluded items in their exhibit collection and how they approached that decision-making process. How did they define the criteria for inclusion? What was their approach to applying metadata? Why did they ascribe certain words or terms to an object? What did their terminology communicate to the user about that item? What information about that item did they perhaps leave out?

The development of this classroom activity was grounded in threshold concept theory, as discussed in the Association of College & Research Libraries' (ACRL) Framework for Information Literacy in Higher Education. The Framework draws on the definition of threshold concepts by Jan Meyer and Ray Land as ideas in any discipline that are "akin to a portal, opening up a new and previously inaccessible way of thinking about something" and represent "a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress" (Meyer and Land, 2003, p. 1). According to Meyer and Land, once grasped by the learner, threshold concepts "create new perspectives and ways of understanding a discipline or challenging knowledge domain" (Meyer and Land, 2010, p. ix-xlii). If students were encouraged to develop a critical view of the elements that underlie organizing systems, they would be more capable and effective users of those systems.

To support learning, I wanted to discover how threshold concepts in the digital

humanities might be distinct from threshold concepts in information literacy and other disciplines. I became most interested in the threshold concept of Organizing Systems. This concept is connected to search and retrieval, but I wanted to bring my technical knowledge to bear and teach students the elements of classification, collections, and algorithms. If students were encouraged to develop a critical view of the elements that underlie organizing systems, they would be more capable and effective users of those systems. In my instruction sessions, students were asked to construct a system for users to find information and then reflect on the choices they made in that process.

In Transforming Information Literacy Instruction: Threshold Concepts in Theory and Practice, Amy R. Hofer, Silvia Lin Hanick, and Lori Townsend take a deep dive into threshold concept theory, how it emerged, and its application in information literacy instruction. The authors propose the following definition of the threshold concept of "Organizing Systems":

> Organizing systems describe, categorize, preserve, and provide access to documents and information about documents. Though often mediated by computers, organizing systems are designed by humans and thus reflect and reproduce human understandings and biases" (Hofer, Lin Hanick, and Townsend, 2019, p. 132).

This threshold has the potential to transform students' understanding of information platforms as "structures built and maintained by people attempting to provide access to the world's information" (Hofer, Lin Hanick, and Townsend, 2019, p. 131). Therefore, I shifted from teaching students about effective information retrieval and, instead, moved towards walking them through the labor and decisions behind these systems. One of the objectives was to reveal the inherent biases in classification systems and the unavoidable imperfections of these systems, which could lead to transformative thinking. As posited by Hofer, Lin Hanick, and Townsend, "understanding organizing systems is a transformative shift because it reveals a complex and imperfect underlying geography of information and the information things that populate it" (Hofer, Lin Hanick, and Townsend, 2019, p. 143). This threshold concept is irreversible because once the complex geography is revealed it is impossible to go back and see a flat landscape.

My objective, here, is not to define threshold concepts in the digital humanities. Sarah Barradell points out that threshold concepts are not only theoretically complex, but methodologically challenging, and that the identification process within a discipline takes "time, reflection, discussion, and most probably debate" (Barradell, 2013, p. 272). Barradell argues for consensus methodology as a useful strategy for identifying threshold concepts within a discipline. Identifying and defining threshold concepts for the digital humanities is work best done through discussion and debate within the DH community. DH scholars and librarians could benefit from coming to an agreement on threshold concepts that

students need to grasp in order to reach learning goals in the digital humanities.

By exploring threshold concepts and their relationship to metaliteracy of organizing systems, I was forced to distinguish between what I perceived as core learning outcomes in the digital humanities and those outcomes that would lead to a new perspective, or a transformation, on the part of the learner. It's worth acknowledging that conceptual teaching is an uncomfortable fit with one-shot instruction. Consequently, I'm still struggling with my ability to encourage transformative learning experiences in my digital literacy instruction. That said, the ideas behind the threshold concept of organizing systems have shifted and informed my approach to the format and content of my instruction sessions. As an early-career, non-instruction librarian, I view threshold concept theory as an opportunity to develop inroads into information literacy instruction to support the digital humanities. Technical services and metadata librarians may want to consider how they can become more involved in digital literacy instruction and act as threshold guides for digital humanities scholars.

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Listen First, Collaborate Later: Possibilities for Meaningful IL+DH Collaboration

by Kate L. Ganski and Ann Hanlon

The University of Wisconsin–Milwaukee Libraries Digital Humanities Lab started as an experiment in 2013 and has stuck around since, developing emphases and services to accommodate our faculty and students. From the beginning, instructors at UWM have looked to the Lab–and other entities on campus–to figure out how and why to integrate DH tools and methods into the classroom. To address those concerns, the DH Lab Advisory Board issued a call for "teaching fellows" in 2018 to create a cohort of instructors who were already incorporating digital or multimodal assignments into their classes. The Fellows were asked to document their experience and share their tools, methods, successes, failures, and lingering questions. In its inaugural year, the cohort included six fellows teaching four classes (four of the fellows were team-teaching) from the disciplines of Linguistics, Architecture, History, Journalism, and Geography. Their classroom assignments included digital map-making, interventions in the comments and "community" of certain YouTube videos and memes, dataset creation and visualization to analyze regional word pronunciations, and public histories and counter-narratives told using maps and digitized primary sources. In its first year the Fellows program did not incorporate the expertise of our teaching librarians or actively engage the principles of information literacy, and instead focused on documenting the strategies our instructors were already employing. Librarians did not intervene in the process beyond providing a space for discussion and documentation, and where necessary, assistance with identifying and using digital tools. But as we discussed the assignments, outcomes, and student experience with instructors, we began to imagine a more active role for information literacy and our teaching librarians.

Initially, the work of the Lab was largely focused on "tool support." The DH Lab prioritizes tools that neither require expensive hosting services nor have a prohibitive barrier of entry when it comes to technical skills and design-savvy. Meeting those criteria was surprisingly easy with the availability of well-designed, open source, hosted tools such as StoryMapJS and TimelineJS, and campus-based access to proprietary but ubiquitous tools such as Excel and Google spreadsheets. Where the cohort generated the most interest was in how those tools were used and how it changed the classroom and students' learning outcomes when they worked in different modes of communication in more public-facing applications. The cohort conducted their classes in fall 2018 and then discussed their experiences at a panel in March 2019. Opening the discussion via a panel brought other voices into the conversation, including those of our Libraries' Teaching and Learning Team. Though the cohort itself never explicitly mapped the ACRL Framework for Information Literacy in Higher Education to their outcomes, assessment, or conceptualization, the teaching librarians in the

room heard clear overlaps that got us, as leaders of information literacy and digital scholarship, thinking about how to engage more deliberately with those concepts in future DH-influenced assignments.

Fundamental to the ACRL Framework for Information Literacy in Higher Education (referenced hereafter as the Framework) is the six conceptual frames that help us teach a way of knowing and not just a way of doing, e.g., seeking and finding information. In particular, the knowledge practices and dispositions of the "Scholarship as Conversation" and "Information Creation as a Process" frames align with possible outcomes, assessment, and instruction for some of the DH Teaching Fellows' assignments. The panel discussion surfaced several parallels, especially regarding how the nature of the multimodal and often public-facing projects led students to consider an audience that was more "authentic" and potentially engaged with what they were learning and articulating in their assignments. For example, Linguistics instructor Kelsey Patillo noted the advantage of using analytical tools and public-facing platforms in her assignment as a gateway for students who were just entering the field. According to Patillo, "…once we have these tools, students can do so many more things with them; it breaks the barrier between, 'this is the theoretical work that I do, and this is something that makes what I do accessible to other people and something that can be shared with others with whom they can talk about what they're learning and why that might be interesting.'" Geography Professor Anne Bonds articulated a similar shift in attitude in her class, where a counter-mapping assignment took on a deeper meaning with the addition of a public-facing and "class-owned" tool: "I'd taught the basic assignment before with the difference that this was the first time that I've included the StoryMapJS tool. What was interesting to me was the shift in the students' thinking about their work. They were very invested in this and felt like it was a class project; they liked being part of the bigger picture. And it was a marked difference from what I've seen in previous years. So, in addition to getting this basic literacy in primary research and this digital tool, they felt that they had something tangible that they could share."

These insights point to potential areas of collaboration between teaching librarians and instructors. For example, the Scholarship as a Conversation frame might be integrated into the design and development of Bonds and Patillo's assignments, with the goal of intentionally engaging students in new and ongoing forms of scholarly and research conversations. In this case, the assignment would move beyond the introduction of new, public-facing tools, toward using those tools as a platform from which students can identify and assess multiple modes of scholarship and self-identify as producers of scholarship not just as consumers. In the case of Bonds' counter-mapping assignment, students created a 2-page urban geographic analysis that informed their production of a counter map of a major east-west corridor across the city of Milwaukee (North Avenue). Here, the students have an authentic opportunity to understand and participate

in a conversation that does not end when they turn in their assignment. Rather, subsequent classes can build on the data collected in previous classes and have a critical dialogue about what new insights can be achieved both by looking back at previous work and in collecting their own experiences along North Avenue – a corridor that itself will change over time, allowing the students to be in dialogue not only with other students but with the city itself.

Building on this developing awareness of multiple modes of discourse, reflective practices and evaluative criteria, the Information Creation as a Process frame might also be leveraged to help students transfer their assignment-based practices to the varied and evolving spaces of both commercial and academic discourse. In the Marc Tasman and Chris Willey's "Troll Project," the instructors engaged students' knowledge of the comments forum on YouTube videos to consider, "the unique capabilities and constraints of [the YouTube video and comments] creation process as well as the specific information need determin[ing] how the product is used." In this way, the assignment is already aligned with this IL frame, but the instructors are not explicitly mapping student outcomes to the knowledge practices or dispositions identified. It could be a small but enriching step to do so. The instructors also identified a missed opportunity for students to connect their observations of YouTube trolling with ongoing scholarly research–an opportunity to align with the Research as Inquiry frame. The assignment did not require students to cite sources, even though the intent of the assignment was to model how academic inquiry stems from observing artifacts that one finds curious. In the typical student experience, research is done for term papers, not for digital projects or journal reflections. In this case, incorporating citation might have encouraged students to think about the academic context that situates this very "un-academic" work, and look to the "spectrum of inquiry" arising from their own questions.

We can also look to the documentation that the Teaching Fellows produced for the Lab to find more opportunities for incorporating the Framework. In Bonds' counter-mapping assignment, one of the stated learning outcomes on the syllabus was, "cite examples of existing theory and research in the field of urban geography." However, source citation was not included by students in their final digital story map even though the students demonstrated the ability to do so in the written analysis. The instructor expressed disappointment about this outcome but could not determine what led students to omit this information from their digital assignment. Looking at this through the lens of information literacy, we might venture that students do not grasp the value of citations to the scholarly community in the context of a digital work. Citing sources is often framed as an anti-plagiarism strategy. Information Creation as a Process conceptualizes the practice of citing sources as a "discursive practice" engaging ideas across time and inviting future scholarly engagement with their own contributions. A collaboratively designed rubric could be one strategy for addressing this learning transfer regardless of the assignment modality.

Likewise, in Nan Kim's History class, a "storymap" assignment that produced richly researched projects encouraged students to remediate a primary source analysis they had completed in another class. By intentionally connecting prior academic research to the assignment, students carried over the academic practice of citing their sources, in this case, the primary sources. One of the stated goals for history graduates is inquiry – asking questions about the present and the past. The final "storymap" projects lack bibliographies, recommended sources, or contextual notes from the authors as evidence of their inquiry. Could this have been an opportunity to enact inquiry in another mode? Were students encouraged to communicate historical research in this medium? Could there have been an opportunity to dialogue about the constraints of the medium? Perhaps employing reflective journaling utilizing dispositions of the Scholarship as Conversation frame could have engaged students explicitly in questions of scholarly dispositions, such as, how does this work engage the research of Milwaukee historians? As with the Fellows' other assignments, both the stated goals of the syllabi and the student projects and outcomes are rich with possibility.

As the DH Teaching Fellows program comes to the end of its second year, we reflect on what we have learned through creating a space in the library for teaching and dialog about DH-influenced assignments. While each project may be unique in the tools and digital skills required, what they have in common is an opportunity to incorporate information literacy concepts as a vital tool for instructors engaged in critical digital pedagogy. One of our next steps is to develop a DH-Lab sponsored summer training session on Scholarship as Conversation and Information Creation as a Process to provide a solid foundation on these concepts and provide constructive space for instructors and librarians to devise ways to develop assignments that improve critical thinking, and scaffold information literacy concepts into DH-based/multimodal projects. We have more to learn, but together with instructors willing to try out new tools, methods, and concepts, we hope to learn (and share!) more about effective ways to help students transfer academic research and discourse practices into new modes of scholarly communication.

About the Authors

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