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Getting on the Map: A Case Study in Digital Pedagogy and Undergraduate Crowdsourcing

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Getting on the Map: A Case Study in Digital Pedagogy and Undergraduate Crowdsourcing

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Abstract

This case study describes my experience implementing a digital writing assignment in a traditional undergraduate literature classroom at Fairfield University while in a pedagogical partnership with *The Map of Early Modern London*, an award-winning, peer-reviewed digital humanities mapping project housed at the University of Victoria. I argue that crowdsourcing opportunities can offer a way for faculty at small liberal arts colleges and universities to increase digital literacy among their students. I suggest that such assignments be framed with supporting undergraduate coursework. I then offer a series of preparatory steps and suggestions on how to modify an existing course in ways that meet student learning outcomes pertaining to digital literacy.

I. Introduction

When undergraduates add to an existing digital humanities project, do they advance their own digital literacy? The answer to this question is not always straightforward. The following case study offers advice, course design ideas, and sample projects for faculty at small liberal arts colleges who are new to digital humanities but who wish to participate in crowdsourcing. It provides an overview of digital pedagogy (with special attention on early modern studies) and its relationship to traditional English classroom instruction, arguing that there is a growing need for digital literacy among undergraduates, and encouraging existing opportunities to partner with doctoral and research universities. I argue that these partnerships work best when crowdsourcing participants engage in intentional reflection throughout the semester, produce more than one multimodal text, and, for spatial humanities and digital mapping projects, theorize mapmaking with secondary readings and activities. I present my own experience at Fairfield University, where my students and I contributed digital-born writing to an award-winning, peer-reviewed digital humanities mapping project housed at the University of Victoria, *The Map of Early Modern London (MoEML)* – a process that began in Fall 2014 and ended in Summer 2016 when our first publication, *Bear Garden* <https://mapoflondon.uvic.ca/BEAR1.htm>, appeared on their website.

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II. Preparing the Course: Undergraduates as Crowdsourcers

Opportunities within early modern studies to partner with digital projects through collective annotation, transcription, and digital writing abound. *Early Modern Manuscripts Online* (The Folger Shakespeare Library) solicits manuscript transcriptions; *Shakespeare His Contemporaries* (Martin Mueller, Northwestern University) aims to collaboratively digitize and curate non-Shakespearean plays; and *18th-Connect* (Texas A&M) helps scholars prepare digital editions of eighteenth-century texts through collective annotation. Such calls for collaboration have been called "crowdsourcing," which, for Rebecca Frost Davis, involves far more than outsourcing menial tasks. For Davis, student participation in crowdsourcing projects meets liberal arts learning outcomes by developing a "habit of engagement with the (digital)

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humanities" which "may be the beginning of a pipeline that leads students on to more sophisticated digital humanities research projects" [Davis 2012]. By providing essential "skills and technology infrastructure," such as coding, artwork, media production, and data aggregation, the universities that started digital projects have opened a gateway for the wider higher education community to participate in digital humanities as collaborators and creators rather than consumers [Alexander and Davis 2012]. Given different institutional priorities, to develop and sustain a digital humanities site on the same production scale as *MoEML* at small colleges is generally cost-prohibitive. As Bryan Alexander and Rebecca Frost Davis explain, digital humanities is a new, cross-departmental enterprise that "has largely been the creature of doctoral and research universities (formerly Research-I under the Carnegie Classifications) and several state campuses, at least on the high-profile production end" [Alexander and Davis 2012, 368]. While small liberal arts colleges or comprehensive universities focus on teaching excellence, they can lack a critical mass of interested faculty and digital humanities centers or labs to experiment, collaborate, or actualize an idea on the scale of doctoral and research universities. Kathleen Fitzpatrick identifies this work as "making archives, tools, or new digital methods" [Fitzpatrick 2012, 13–14]. *MoEML*'s invitation to collaborate solves the small liberal arts college's resource gap, a worthwhile achievement in and of itself.

However, individual instructors who participate must explain, integrate, and justify adding a digital writing assignment to a traditional humanities course so that the undergraduates whose labor benefits the partner institution maximize their learning experience. Several preparatory steps taken on behalf of the instructor strengthen the ability of students to learn from their work as crowdsourcers. Instructors should significantly modify a traditional course, or (ideally) design a new, standalone digital humanities course, such as a practicum that emphasizes digital learning outcomes on the syllabus. A practicum or series of new courses would allow her to think outside of the box of a conventional fifteen-week semester since essays or transcriptions may require more time for revision and the peer review process. Instructors could involve more than one cohort of student-collaborators in sequential courses for the same project. Finally, the course should foreground and reinforce digital literacy on a smaller scale in related course activities and assignments, such as opportunities to digitize objects, to engage in shorter digital writing tasks, to understand, discuss, and reflect critically on the uniqueness of multimodal writing, and—for spatial humanities projects such as *MoEML*—to read through the theory and history of mapmaking. Adjusting the course in these ways will promote student learning outcomes that pertain to increasing digital literacy, which I determined should be one of crowdsourcing's priorities in the undergraduate classroom.

First, it helps to modify or design a humanities course that supports both the time and the resources students need to write, revise, and publish a peer-reviewed research paper as well as to learn digital humanities skills. At the undergraduate level, a ten-member field practicum would have been ideal, since practica bridge the professional world, where faculty publish critique, and the classroom, where students receive grades. Wheaton College undergraduates, for example, contribute episodes to *The History Engine* (<http://historyengine.richmond.edu/pages/>) in a fascinating course designed specifically for this work, "Junior Colloquium: Historical Methods." The practicum could be sequential ("Digital Humanities I" and "Digital Humanities II") to accommodate multiple revisions or false starts. Alternately, the same course could run every term with fresh students, a model wherein each cohort is responsible for revising their predecessors' work after peer review. In this model, students would remain in contact with one another, but the first cohort would not be under obligation to contribute once they begin new courses or graduate. Even if these contributions require more than fifteen weeks, theorizing a student's first draft as a partial, unfinished component of a digital humanities project that an author might not experience beyond a single term has unexpected benefits. A delayed pay-off presses an undergraduate to reflect beyond instant gratification, individual terms, grades, and degrees, and allows her to see collaborative intellectual labor in a long-term framework wherein creating requires more investment than consuming. The critical research skills she honed while sifting and organizing data on an unknown topic will, of course, translate to the workplace and everyday world, as will her ability to conceptualize technology as tool and object of study.

Since crowdsourcing asks contributors to build on another institution's project, coursework ideally would include an

opportunity for students to experiment with digital writing (blogs, tweets, wikis) and humanities data analysis on a smaller scale. The following strategies will give students experience making digital tools by exposing them to methodology, theory, and practice. Before theorizing a digital map, a critique of print maps and map-making would have helped, since many undergraduates have no experience analyzing something as quotidian as a map. However, Jean E. Howard reminds us that in the early modern period "maps were often considered rare and precious objects, and seeing a map could be an important and life-changing event" [Howard 2016, A11]. Maps are also never neutral. *MoEML*'s Agas map privileges the center (St. Paul's, as was typical), but why and how? Rhonda Lemke Sanford's introduction to early modern maps, "Conventions of Mapping: Centers, Peripheries, and Orientations," in *Maps and Memory in Early Modern England*, is a way to deepen student appreciation of maps as historically contingent ways of knowing and representing space [Sanford 2002, 4–11]. Students could analyze or draw maps of their hometowns, and then question what they chose to privilege, push to the margins, or exclude entirely before applying these same question to the map of a foreign city. One of my colleagues, Sonya Huber, invented a Google maps assignment ("Lyric Collaborative Map") with her creative writing students (<https://sonyahuber.com/2015/03/30/essay-assignment-a-lyric-collaborative-map-of-campus/>) inspired by *MoEML*; this too would give students a chance to experiment with a local spatial mapping project. Once students realize that different centers are possible, as Sanford argues, they will begin to think critically about the representation of spaces more familiar to them. A map's view usually closes off certain features of the city (slums, poverty, smoke, sewers) and directs the gaze elsewhere. Knowing this fact allows students to apply the same principle to their own entries. Where are we directed to look in our specific research, and what is closed off from view? Once they see any map as a malleable text, they can move with more ease to the more abstract question of the *MoEML* digital Agas map as another new kind of text, and begin to question how its digital medium both creates and limits forms of understanding.

Critical thinking about maps would have prepared students for a spatial humanities project, as would an assignment that digitized objects. A variety of preliminary readings on non-linear networks, hypertext, and spatial humanities could have contextualized individual contributions to *MoEML*, a site that changes constantly through its unique ID system. Every time a new entry is uploaded, a new layer of information automatically becomes linked to preexisting data; the older entries may change, or rather, will change, since they may address information in new, as yet incomplete entries. John Jentz captures this sense of change in his definition of the digital humanities center at Marquette University as "a moving constellation of academic communities building digital objects that interpret the human experience" [Jentz 2013]. *MoEML* entries are also moving constellations. There are many digital mapping assignments designed for the undergraduate classroom that can reinforce their work for crowdsourcing projects with preexisting digital infrastructures. One good example, from Kathryn Crowther, currently at Georgia Perimeter College, asks students to work in groups to choose a literary text and map it in any digital format. After she gives a number of options (hypertext, annotated texts, Google map, text cloud) Crowther reminds students "there should be an implicit argument" in their projects: "the data you are mapping should give us new insight into the text, or should provide us with a new way of looking at the text that broadens our interpretation of it" [Crowther n.d.].^[1] Progress on individual digitizing projects and the *MoEML* assignment could be recorded on a project blog to publish work online within the fifteen-week semester and to practice digital composition. Ideally, all undergraduates at work on a digital humanities project such as *MoEML* that is housed at another institution could pool their resources, collaborate, and learn together online.

Finally, research proves faculty members too need to build communities of practice. A digital tool such as a password-protected wiki or project blog written by participating faculty could grow in tandem with the surface project. In my cohort (Fall 2014), six or seven faculty members supervised undergraduate labor; as a community, we could have shared tools, resources, and classroom experiences. However, there was not a way to contact one another. As it stands, faculty contributors pioneer their work alone. Although *MoEML*'s Research Guide covers an impressive range of concerns for students and faculty, some pedagogical questions unique to faculty (Will we allow our students to fail? How and when should we intervene? How can we grade this project?) puzzled me. This would also be a place to address questions of rank and tenure, where, as Bethany Nowvickie observes, junior scholars in digital humanities "struggle to make their

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own *new work* look enough like their forebears' *old work* to earn a modicum of employment stability" [Nowvskie 2015]. From the beginning, it is helpful to know with clarity how a born-digital article on the Bear Garden, for example, is fundamentally changed by *MoEML* spatial mapping techniques and internal/external links. There is an enormous amount of criticism on bearbaiting, including several essays on *MoEML*; what distinguishes ours? Undergraduates need to think through this question, but it also pertains to tenure-track faculty with promotion and tenure criteria in mind. The University of Nebraska's Center for Digital Research in the Humanities suggests that criteria for traditional print scholarship applies to digital work, but that additional criteria exist: "Specifically, how does the digital component of the humanities research contribute to its originality? What are the implications in terms of audience, pedagogy, and the creation of research tools?" [CDRH 2016]. A new "culture of assessment" would acknowledge the emergent value of peer-reviewed, digital-born scholarship among humanities faculty [Rockwell 2011, 166]. By acknowledging and addressing the needs of both faculty and students who contribute to a crowdsourcing project, partnerships between doctoral universities and small liberal arts colleges will thrive and continue to support undergraduate learning.

III. Digital Pedagogy and *The Map of Early Modern London*

In Fall 2014, I asked my undergraduates at Fairfield University, a comprehensive university in the Jesuit tradition in Fairfield, CT, to contribute to *The Map of Early Modern London* as part of their regular course activities.^[2] That year we joined a handful of other classes at universities and colleges across the globe that semester in pedagogical partnerships with the University of Victoria, nearly five thousand miles away. If the students' collaborative essays successfully pass peer review, the articles will appear on *The Map of Early Modern London* (<https://mapoflondon.uvic.ca>), a digital humanities project which remediates the *Civitas Londinum*, or "Agas" woodcut map of London, a famous bird's-eye view of the city associated with Ralph Agas, ca. 1561-1566, by annotating the entire map.^[3] Although there are multiple ways to navigate this site, including an encyclopedia, a library, a gazetteer, and a special section that will eventually include digitized transcriptions of four editions of John Stow's *A Survey of London*, the Agas map begs to be investigated with more immediacy than the data organized in traditional search fields. Most map entries refer to Stow's chorographic *Survey*; listings should also include each street, building, neighborhood, parish, or church's literary significance, appearance in contemporary map, print, or manuscript sources, and all extent historical scholarship. The criteria of evaluation used by *MoEML* project directors align with those used by print-based encyclopedias, but the results differ significantly. Toponyms, historical persons, and primary and secondary sources in *MoEML*'s born-digital articles are hyperlinked within the site's growing database, providing web readers unique, non-linear paths of navigation each time they access the entry.

In mid-summer 2014 *MoEML* accepted our request to participate. Since my research fields are literary ecocriticism, critical plant studies, and the Italian Mannerist garden, *MoEML* directors assigned Fairfield students the Agas map's five gardens: Bear Garden, Pike Garden, Paris Garden, Ely Place Garden, and Covent Garden. As we would learn, only two of these spaces constituted gardens in the modern sense of the term, while other spaces, such as Moorfields and Spring Garden, were known as London's first public parks during the period. However, the very thought that an aquaculture operation (Pike Garden) or bearbaiting arena (Bear Garden) might be called a garden led to productive conversations among students. Once I had our assigned sites in July, I partnered with Fairfield research librarian Curtis Ferree, who agreed to lead multiple workshops on finding digital and print source material, organizing data, and responsible citation. Ferree was involved with the assignment from the start, even reading through first drafts together with me over coffee. To ensure that our library would support students on this project, I ordered several books in advance and arranged to keep them on reserve for the duration of the semester, although the lionshare of essential sources were either peer-reviewed articles (often in history, architecture, or literary journals) or older, out of print books published in the late nineteenth or early twentieth centuries.

Due to my research trajectory that summer I did not research the Agas map's gardens in advance. In hindsight, however, such work is vital: despite the time and assistance we gave students to gather appropriate resources, by mid-

semester their results were far from complete, even with the helpful *MoEML* Guide for Student Researchers (http://mapoflondon.uvic.ca/research_guidelines.htm). As one wrote, it was "extremely difficult to find information about topics or words I found in my sources," while another wrote, "when it was time for us to start researching, I felt lost." Given the time constraints on a fifteen-week course and the enormous difficulty locating viable sources, I recommend preparing each bibliography in advance.^[4] When working with undergraduates it is difficult to replicate the surge of time required by the apprentice-model at the doctoral level. There was not enough time to recover from false leads, while writing and revision of this caliber requires time to ferment. In hindsight, I would have let the students try independently and then provide the requisite titles. But this also speaks to a decision I made early in the process that my students would be allowed to fail (and some failed mightily, despite heroic effort) until the very end, but that I would not forward articles deemed incomplete to *MoEML*. As a result, I did more than exercise significant editorial intervention. I rewrote the article, deepening its research, which required me to add my name as an author, but allowed me to reward also whatever labor my students performed in fifteen weeks.

As I contemplated asking my undergraduates to create digital writing for another university's digital humanities project, I began to reexamine my pedagogical assumptions. The course that I chose to implement this assignment was EN213: Shakespeare I, an upper-division Shakespeare survey with an enrollment cap of twenty-five. We met twice a week, and coursework centered on the eight comedies and histories we read together. EN213 had three traditional learning objectives: develop oral and written skills, learn to appreciate literature, and develop creative capacities. Although I ask students to engage in performance-based learning activities and then conclude the course when they stage 10-minute scenes together, most of my pedagogical and assessment tools in the course are traditional: a white paper essay, short-answer exam(s), and short lectures followed by discussions. How would I create a learning objective that pertained to a digital literacy, and how would that add or subtract from time spent on the other three more traditional learning objectives? By asking these questions, I was shifting the subject of investigation from digital humanities research to pedagogy, which, for Brett D. Hirsch, is too often "bracketed" or given the "the status of an afterthought, tacked onto a statement about the digital humanities...often in parentheses" [Hirsch 2012, 5].

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As David Lewin and David Lundie explain, "digital pedagogy" is an emerging field of study that combines four overlapping fields: the philosophy of technology and information theory, critical pedagogy, and educational philosophy [Lewin and Lundie 2016, 235]. The field addresses technological change from the perspective of education, and seeks to understand how a rapid pace of innovation impacts educators and students alike. While some academics argue that technology revolutionizes teaching and learning, others approach technology with more caution, and some are simply technophobic. In "Why Teach Digital Writing," WIDE (Writing in Digital Environments) identifies common forms of resistance to digital writing in the composition classroom: writing online should only happen once students master print-based writing in linear essays; computer specialists should teach all technology-related tasks; liberal arts education "should not succumb to vocational training;" and the technological resources needed to teach digital writing are cost-prohibitive [WIDE 2005]. For WIDE, faculty can resolve concerns and opposition to digital pedagogy with support from faculty development, which means "truly cultivating an ecology of digital writing through a commitment to regular training sessions, mentoring approaches, sustained software, hardware, and other support."

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For some researchers in the field of education, the disciplined study of English literature has always been experiential. Since so much of our experience occurs while immersed in digital culture, it makes sense that we adapt an attitude of critical reflection on the digital world while producing digital-born writing. As David Ciccoricco and Bill O'Steen observe, English pedagogy was defined broadly as "engagement with contemporary contexts" as early as 1935 [Ciccoricco and O'Steen 2005]. The teacher's main role in this model (from 1935) is "that of a facilitator for experiences and not merely a dispenser of requisite content." In *Professing and Pedagogy: Learning the Teaching of English* (2005), Shari Stenberg argues that the professor is a "facilitator of student projects, a co-inquirer, a learner" [Hirsch 2012, 15]. Thus by asking students to co-author digital writing (or digital-born writing) in a group project intended for publication on *MoEML*, I would be continuing a new variation of an older model of teaching. Ciccoricco and O'Steen go on to acknowledge that

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most all texts today rely on digital writing technologies for their production. In their course, they developed a learning objective to capture student understanding of the uniqueness of "digital rhetoric" on the web. That is, a form of self-contained nodes (writing without long paragraphs) and internal and external hyperlinks that allow users to forge unique pathways of reading content, as opposed to a traditional paper medium, "which is resolutely linear and hierarchical in organization." With time to reflect on how this form of writing differed from print essays, students could expect to exit the course with a more pronounced digital literacy skillset.

Reflection on the process of producing digital work is crucial in a variety of learning contexts. When Troy Hicks examines the process of creating digital portfolios, for example, he notes that simply collecting and digitizing an archive of artifacts is not enough. Students need to reflect with intentionality on how technology is integrated with each artifact throughout their digital work, and to have some sense of how readers may navigate the site through multi-linear pathways. Digital literacy, for Hicks, "involves the ability to view, read, and interact with new media texts as well as to compose, design, and author them" [Hicks 2005, 205]. Hicks wants student and teachers to see themselves as "web writers" whose work appears in a "medium of constant change," while Ciccoricco and O'Steen coin the term "designwriters" [Hicks 2005, 205] [Ciccoricco and O'Steen 2005]. The New London Group emphasizes "multimodal design." All of these terms address the fact that we use images and graphical elements (type set, color, size) differently in digital work. With digital writing, design pertains to the imagetext on the screen, but also the overall layout of the (external/internal) hyperlinked essay, digital portfolio, or website. WIDE also prefers the term "multimodal," since, "today writing means selecting among and scripting multiple media, including photographs, charts, videos, images, audio, diagrams, hyperlinks, and more" [WIDE 2005]. The practice of linking might be the most essential tool to promote student understanding of how digital writing differs from other forms of classroom experience. As Ciccoricco and O'Steen note, "through the practice of linking," students learn more about "intertextuality" and become able to see "their own texts as being woven into a broader network of texts, and not just the network of texts contained by" their particular class web project "but also – through the permeations of external links – that of the World Wide Web itself" [Ciccoricco and O'Steen 2005].

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Collaborative knowledge creation would be essential for this project in other ways too, since it required social participation: co-authoring material, collaborative research methods, and the production of a hyperlinked essay that connects with other writers across *MoEML* and the Internet. For the New London Group, educators should recall the purpose of pedagogy, which is "a teaching and learning relationship that creates the potential for building learning conditions leading to full and equitable social participation" [The New London Group, 60]. Ideally, students leave the classroom better equipped to be citizens of the world, and to express themselves in both "page-bound" and digital-born formats. The New London Group suggests that the changing education environment requires that we teach "multiliteracies," a term that refers to both "the multiplicity of communications channels and media, and the increasing saliency of cultural and linguistic diversity" [The New London Group, 63]. By researching "radical changes in working life," rising global citizenship and civic pluralism, and changes in private and public lives, the New London Group makes the case for undergraduate curricular changes that prepare students best for life after graduation. Considering the assignment's social dimension from the perspective of collaborative knowledge making and global citizenship helps us put the new practice of crowdsourcing into a more positive perspective.

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Several of my students identified *MoEML*'s permanence and stability as the most appealing part of the project. One senior felt that it was "so interesting to have a final project that doesn't end up in a file somewhere or sitting in a box with all my other final papers. I like how even after the class is over this project will continue to evolve and expand." Another wrote that it was "validating" that the assignment went "beyond our professor's desk" for the public to use. And it should be undergraduates who remediate the early modern archive, what Bethany Nowviskie sees as "opening up lost or formerly inaccessible humanities information," for now they – and "formerly under-represented groups" – have the capacity to see digitized texts once held in password protected databases, or to digitize texts themselves [Nowviskie 2015].^[5] The end result, moreover, helps curate *MoEML*, a tool that is freely available to users across the globe.

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Despite their excitement in the overarching potential of this new platform, students rightfully questioned how the project fit into existing course material on Shakespeare. Only one of Shakespeare's plays we read (*Richard III*) explicitly mentions one of our topics – Ely Place garden, where Richard sends the Bishop to retrieve strawberries. As a consequence, at least one student wrote that in "a Shakespeare course," her work on *MoEML* "seems like historical outside fieldwork," and she wished that the project "was introduced more in relation to Shakespeare." Such issues might be avoided if our topics pertained directly to the theater, as many *MoEML* projects do, or if I had designed a new course as an interdisciplinary digital humanities practicum housed in the English department. Some of the assignment's challenges derived from the fact that we were engaged in historiography while in a literature course. Unlike the conventional argument-driven close readings of literary texts that my students feel comfortable writing, the crowdsourcing project requires students to locate, judge, and organize large amounts of data as forensic historians. The task is complicated by the fact that the Agas map is a static snapshot of London during a period of nonstop change and growth. Few sites remain consistent during the sixteenth and seventeenth centuries, and some (including two of ours – Paris Garden and Pike Garden) cannot be located definitively. Other sites we researched began as concrete spaces, but ended as generic terms for altogether different spaces, events, or activities. Often, we learned the "cartographic evidence" did not concur with the recorded configuration of buildings in archaeological evidence or historical documents [Mackinder and Blatherwick 2000, 17]. In addition, my undergraduates learned for the first time that historians disagree. While frustrating for students, understanding sixteenth and seventeenth-century historical facts as susceptible to strong debate eventually allowed them to grow as scholars. Students who struggled (and they all did) with this realization found ways to accommodate the unknown within their research. The map, tantalizingly friend and foe, provided visual data that only applied to a very specific (pre-1570s) data set in each entry.

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In hindsight, there are ways to jumpstart solutions to these traditional undergraduate research dilemmas. By the second week, I would recommend asking each student to survey 2-3 existing *MoEML* entries and answer specific questions: how did the author(s) organize his or her data? What data did they choose to include? What internal connections leap to the surface? Is the entry readable, and where are its hyperlinks? I would ask students to analyze the bibliography and share their results with classmates and their own groups to develop target research questions. I would point to the attempt by all contributors to write without bias or opinion, and I would stress the need to stay within the allotted early modern time period even if momentous events occur in the next century, as with the famous eighteenth-century theater district, Covent Garden. Ironically, the research required in these encyclopedia entries led students to regard the Internet with great skepticism: as one student wrote, "I found it really difficult to trust anything we found online," while another stated "the internet is full of faulty claims." Sue Bennett, Karl Maton and Lisa Kervin's study of the "snatch and grab philosophy" predicts as much: "students' everyday technology practices," including the instant gratification tied to social media and most Internet searches, "may not be directly applicable to academic tasks" that require critical thinking [Bennett et al. 2008, 781]. But as a result, students evolved as researchers to the point where they saw the need to confirm whatever they wrote via more than one scholarly article. The project was most successful in this area, as one spoke of gaining "a better understanding and respect for what faculty researchers do."

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By summer 2015, when I had the chance to revise my undergraduates' work, it became clear that our story as a contributing partner to this digital humanities site was obvious: as city of London and its population grew in between 1550 and 1600 from 55,000 to 200,000 residents, the city lost fields, pastures, farms, patches of wilderness, and gardens, many of which had been monastic land dissolved by the crown during the Henrician Reformation [Howard 2016, A13].^[6] We knew that urbanization reduced London's green spaces, but we could not prove it until we dug into the data. By the end of the seventeenth century, our assigned fruit and vegetable gardens (Covent Garden, Ely Place Garden, Paris Garden) had become the ghosts of gardens, and open spaces were increasingly hard to find. As Norman G. Brett-James writes, "whereas London was little more than the one square mile in 1600, it had now grown in all directions and had swallowed up much of the country in its immediate vicinity" [Brett-James 1935, 467]. Using the "botanical rambles" recorded in John Gerard's *Herball* as a guide to urban wildlife, Brett-James reminds us that citizens of London could hunt and shoot game within easy reach of their houses before 1600 [Brett-James 1935, 447, 450]. J.

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Fairchild's *The City Gardener* (1727) even notes that most trees could not endure the fumes resulting from burning sea-coal, the new fuel that replaced trees as the source of the city's energy. We had immersed ourselves in a very familiar story of urban sprawl, pollution, and deforestation that speaks in compelling ways to contemporary narratives of ecological crisis. However, this realization came too late for Fairfield undergraduates to see given a fifteen-week semester.

IV. Conclusion

I learned that Fairfield undergraduates' critical research skills grew significantly when given the honor of publishing an online scholarly article on early modern London's gardens for a digital humanities project housed in a research university. The success of *MoEML*'s digital learning outcomes for its pedagogical partners at small universities and colleges, however, depends on the course, its enrollment cap, and accompanying mapping and digitizing assignments. In other words, a digital writing assignment is not always enough to increase digital literacy; a more pronounced understanding and implementation of digital pedagogy on behalf of the contributing instructor makes the project more effective. Most of my student-laborers graduated before I submitted entries to *MoEML*, so they did not revise or share in the success when the articles were accepted (as two have been) and began to appear online. Indeed, *MoEML* allies and crowd-sourced laborers for other projects need to engage in multiple partnerships to be successful: we must partner with librarians, college-wide curriculum committees, our departments (whose members determine which types of courses we teach follow enrollment caps set by administrators), and rank and tenure committees, whose members evaluate the worth of long-term investment in undergraduate research and judge the status of print, digital, or new media publications for promotion. But the results of these partnerships far outweigh the complications of bringing about such accord. When undergraduates emerge from the classroom with confidence and experience expressing themselves in a digital environment, we equip them with training relevant to careers, civic engagement, and living their public and private lives in a dynamic digital culture.

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Notes

[1] Crowther's example applies to undergraduates. For a provocative description of a graduate course co-taught by faculty in literary studies and computer science, see [Engel and Thain 2015].

[2] According to Carnegie classifications, Fairfield is a comprehensive research university, as it includes a handful of professional schools – Nursing, Business, Education and Allied Professions, and Engineering. Fairfield has approximately 3,000 undergraduates and 500 graduate students.

[3] For an introduction to the Agas map and its relationship to its predecessor, Braun and Hogenberg's *Civitates Orbis Terrarum*, see [Marks 1964, 9–18].

[4] I struggled with my students' tendency to rely on Howard Roberts and Walter H. Godfrey's *Survey of London* in British History Online when there were better primary and secondary sources available.

[5] In fall 2014, Fairfield's library did not subscribe to a key password-protected database, *Early English Books Online*, which made our work difficult.

[6] Data referring to London's population in the early modern period depends on what constitutes the boundaries of the city, and is subject to debate.

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