Interdisciplining Digital Humanities
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Educating

Providing the foundation for the development of skills of creative and critical synthesis is one of the most important learning affordances offered by the university to those whose learning emerges through their travels across media flows, among distributed learning sites, and in dialogue with contradictory sources of disciplinary authority.

—Anne Balsamo, Designing Culture: The Technological Imagination at Work (Durham, NC: Duke UP, 2011), 147

The CMS approach is characterized by radical interdisciplinarity: our goal is to encourage students to mix and match approaches taken from the humanities and the social sciences in search of answers to driving questions about the cultural and social impact of media on the world around us.

—“Comparison Across Disciplines,” Academic Program Overview of the Comparative Media Studies Program at MIT,” formerly http://cmsw.mit.edu/about/

Keywords: context, balance, tractability, relationality, interplay, participatory, interplay, remixing, intentionality

Research centers have been more prominent in the institutional profile of Digital Humanities than educational programs. In the Blackwell companions to Digital Humanities and Digital Literary Studies, Brett Hirsch reports, “pedagogy” and its synonyms appear far less often than “research.” A survey of recent literature also indicates a trend toward “bracketing” that relegates teaching to an afterthought and even outright exclusion (4–5).
And, in a survey of article titles in *Digital Humanities Quarterly* and abstracts of NEH Digital Humanities Start-Up Grants, Stephen Brier found that “research” appears far more often than “teaching,” “learning,” “pedagogy,” and “classroom” (390–99). This hierarchy of values is not unique to Digital Humanities. Katherine Harris calls teaching “invisible labor” (341), and Brier dubs pedagogy, curriculum development, and scholarship of teaching and learning “the ugly stepchildren of the university” (344). The number of DH courses and programs is increasing. The pattern is uneven, however, and claims need to be weighed against generic indicators of strong programs in interdisciplinary studies. After examining the nature of the DH curriculum, this chapter turns to the particularities of introductory courses, balance of humanities content and technological skills, and role of theoretical and critical analysis. It then defines pedagogies that promote interdisciplinary learning and attendant skills. Taken together, the findings suggest a definition of digital teaching and learning as *interdisciplinary* practice. The chapter closes by comparing strategies in different institutional settings and factoring in continuing professional development.

**Curriculum**

Digital Humanities is one of many forms of *interdisciplinary studies*, an umbrella term for programs as varied as integrated approaches to general education, interdisciplinary fields, and professional training. Strong programs share several traits: they have a clear intellectual agenda, required core courses, their own full-time faculty, a supportive infrastructure, partnerships with other units, a clear report line to an upper-level administrator, and a voice in policy, budget, staffing, and curriculum (Klein, *Creating Interdisciplinary Campus Cultures*, 105–7). Many programs fall short of these criteria, however, and few offer all undergraduate and graduate degrees. There is no comprehensive collection of Digital Humanities syllabi, but several sources yield a general picture. The CUNY Digital Humanities website has a volunteer sampling, Tanya Clement compiled a list of DH-inflected undergraduate programs from a survey on the Humanist listserv, and the Zotero Digital Humanities Education group also has volunteer samples. Most degrees, Hirsch found, have support from DH research hubs (9), and most Humanities Computing programs, Melissa Terras reported, have been offered at the master’s level. The new MA in
Digital Humanities at Carleton College, for instance, is an outgrowth of experience in the Hypertext and Hypermedia Lab, Carleton Immersive Media Studio, and Great Lakes Research Alliance for the Study of Aboriginal Arts and Cultures.

Terras’s own study drew on multiple sources, including a conference on the Humanities Computing curriculum, literature review, interviews with ten scholars, and comparison of the MA in applied computing in the humanities at King’s College, master’s courses in Humanities Computing at the University of Antwerp, Digital Resources in the Humanities at University College London, and Digital Humanities at the University of Illinois at Urbana-Champaign. Although they are located in different units—a center for computing in humanities, an English department, and schools of library and information studies—they bear similarities. Most courses focus on techniques to produce, manipulate, and deliver e-text. A significant amount of groupwork and assessment occurs in projects or take-home exams demonstrating both implementation of technology and the theory behind it. Digital text is a common focus, along with theory, tools, and techniques for markup and analysis. And, reading lists are similar (“Disciplined”).

Like other interdisciplinary fields, Digital Humanities exhibits a range of offerings (see fig. 2), from specialized courses and degrees to digitally inflected approaches that do not concentrate on DH but expand the presence of new technologies and media across the curriculum. Spiro’s analysis of 134 syllabi in the Zotero DH Education group collection provides an overview of courses taught after 2005. They were all written in English, and most were from the United States, although the collection includes some submissions from Canada, Great Britain, New Zealand, and Belgium. Undergraduate courses outnumbered graduate ones (sixty-six versus fifty-one, though in eight cases appearing at both levels and in nine cases unclear). English was the most frequently represented discipline (thirty-seven versus twenty-two in history, with a separate category for rhetoric and composition tallying four). The areas typically categorized as interdisciplinary included media studies (twenty-one), Digital Humanities (sixteen), interdisciplinary studies (fifteen), and visual studies (three). In addition, submissions came from library and information science (seven), computer science (four), and communication (two), as well as the disciplines of anthropology (two) and philosophy (one). At the time of Spiro’s analysis the collection did not have entries from classics, linguistics, and languages, though other reports document increased attention to digital
technologies in related classrooms. Spiro’s SEASR ngram captures the keyword landscape of syllabi.

Looking more deeply at content, Spiro analyzed the reading lists of fifty-one courses. The most frequently reported assignment is the Blackwell Companion to Digital Humanities. Many courses focus on text, although other forms of media include video, audio, images, games, and maps. The most common defining concepts include data and database, openness and copyright, network, and interaction. Arriving at preliminary conclusions from this “Big Tent” collection, Spiro highlights several shared features. The courses tend to link theory and practice, underscoring the orientation toward methodological interdisciplinarity observed in earlier chapters. They tend to produce projects and are collaborative in nature, also affirming movement away from the traditional lone-scholar model of humanities research. And, they engage the topic of social media as well as reflections on contemporary topics such as copyright. (Spiro’s results and the ngram are available in a PowerPoint presentation for the June 2011 Digital Humanities conference “Knowing and Doing: Understanding the Digital Humanities Curriculum.”)

Representative examples in three areas sketch an even fuller picture of the interdisciplinary contours of DH curricula and teaching.

**Introductory Courses**

Introductory gateway courses are crucial, because they are the moments when a field and its core content and methods are defined. Without a clear understanding of the field and relationship between courses in a program, students and even faculty lack a sense of its disciplinary and interdisciplinary contours. Introductions to DH appear across a broad range of contexts, from general education and traditional disciplines to programs training DH professionals. Generally speaking, introductory courses have a multidisciplinary tendency, because they must provide an overview of content, methods, and tools. The balance and focus vary, though, depending on curricular goals, student population, and local infrastructure.

The MA/MSc degree in Digital Humanities at University College London (UCL) illustrates a strong technical-professional mandate. Housed within UCL’s Department of Information Studies, the MA/MSc prepares
Fig. 2. Lisa Spiro’s Word Cloud of Digital Humanities syllabi
students for work as project managers, information specialists, or researchers in the cultural and heritage industry and in publishing and digital environments that require constructing computational systems. All students take five modules during the first two of three terms: Digital Resources in the Humanities, Internet Technologies, Introduction to Programming and Database Querying, Server Programming and Structured Data, and XML. The program culminates in a dissertation and work placement at a London-area library, archive, or museum. The claim to being “truly interdisciplinary” is trifold. First, teaching units are linked structurally with computer sciences and modules in arts and humanities, social and historical sciences, engineering sciences, and the Bartlett Faculty of the Built Environment. Second, the gateway Digital Resources course aims to “familiarize” students with computing technologies and applications in humanities research and teaching, preparing them to make “informed” decisions about design, management, and use of resources. Third, foundational knowledge and decision-making capacity are integrated into understanding how access, manipulation, and analysis of resources can benefit both humanities and the cultural and heritage sector.

In contrast to the full degree program at UCL, David Michelson’s undergraduate “Introduction to Digital Humanities” was housed in a history department at the University of Alabama. The course covered three areas: definition of Digital Humanities, readings and guest visits with project directors, and development of a digital element in individual projects. The focus was primarily on the relationship of DH research to the disciplines of history and literature, although the course also considered questions of interest to humanities in general and the limits and constraints of technology. This combination is typical in introductory courses, bringing together preliminary definition with core readings and/or guests then culminating in projects that allow students to situate digital technologies and new media within their own interests. The choice of readings and guests, as well as the range of projects, usually reflects the disciplinary or professional setting of the course. Even in the same discipline, though, focus may vary.

In English, for example, John Unsworth’s English-listed course on Digital Humanities at Brandeis University introduced students to the history and range of DH with a focus on literacy studies. Seated at the intersection of humanities and information technology, the course covered extensible markup language, text mining, and social media, along with hands-on work with tools. In contrast, Alexander Huang’s English seminar on Digi-
tal Humanities featured themes such as race, gender, access, disability, and diversity, as well as visual and print cultures, canon formation, and reading strategies. In further contrast, Adeline Koh’s “Introduction to Digital Humanities” combined introduction to basic concepts and debates in the field with hands-on lab work on a specific project, Digitizing Chinese Englishmen, and participation in a distributed online MOOC on “The Future of Higher Education” (Adeline Koh, e-mail, July 12, 2013). My own graduate seminar in DH moved from initial definitions to an overview of implications in the three major areas of the local department: literary and cultural studies, composition and rhetoric, and (film and) media studies. Because the majority of students did not have advanced technical skills, their final work was more thematic but with a required digital component and short “lightning talk” accompanied by a handout.

Given the proliferation of digital technologies and new media, it is not surprising to find a growing presence in general and liberal education. When John Theibault taught “Introduction to Digital Humanities” at Stockton College, it was offered in the undergraduate General Arts and Humanities curriculum. Accessible publicly online for a limited time, the course introduced students to ways the computer and Internet are transforming research and teaching in disciplines such as literature, history, art, and music history. Theibault incorporated computer methods and digital media into the study of traditional topics, while also applying humanities methods to studying products made possible by new media. Theibault’s sense that the field is strongly connected to project-based work was evident in the combination of exemplary projects and students’ own final work. It is not unusual to find similar readings across contexts, especially the Blackwell Companion to Digital Humanities and more recently Matthew Gold’s Debates in Digital Humanities. From there, however, lists are tailored to context. Theibault’s required readings, for example, included the Blackwell Companion to Digital Humanities and Dan Cohen and Roy Rosenzweig’s Digital History. In an English department, Matthew Kirschenbaum’s essay “What is Digital Humanities and What’s it Doing in English Departments?” is more likely to be assigned and chapters from the Companion to Digital Literary Studies.

Like DH research centers, curricula also have institutional signatures. Loyola University Chicago’s three-credit “Introduction to Digital Humanities Research” prepares students for careers in conjunction with local expertise in textual studies. The targeted areas are archiving, digitizing, ed-
iting, and analyzing, as well as interface and web design, and presentation skills. The course, though, also takes up broad social and ethical questions surrounding media and contemporary culture. In contrast, the Media and Cultural Studies major at Macalester College is aligned with a local commitment to internationalism, multiculturalism, and community service with a focus on history and critique. The introductory course on “Texts and Power” establishes a history of cultural analysis that frames continuing debates in media studies. In addition to other courses and a capstone seminar centered on an independent project, the major requires one advanced course in media/cultural theory, two courses on race or gender/sexuality and the media, one in analyzing or making media, and two approved electives in media studies.

The Balance of Humanities Content and Technological Skills

All interdisciplinary fields grapple with the challenge of achieving a balance of their disciplinary parts. In Digital Humanities, balance is compounded by the added involvement of occupational professions, though the most contentious point of debate is the proper weight of technology and humanities content. William Turkel expressed dismay when meeting people who describe themselves as digital humanists but do not do programming or master some of the technologies. On the opposite side of the debate, others worry about depth of content knowledge. In a 1986 article based on a workshop about teaching computers and humanities, Susan Hockey reported no consensus on whether programming should be taught (“Workshop,” 228), although a search of the word undergraduate in the journal Literary and Linguistic Computing revealed a prevalent view that undergraduate curricula are skill based rather than research based (Clement, 371). Here again, context matters.

Theibault’s “Introduction” did not require special programming skills, and Michelson’s “Introduction” did not stipulate prior technical literacy because it is open to students at all levels. In contrast, the “Proseminar in the Digital Humanities” in the School of Information at UC Berkeley expects students to contribute to designing, analyzing, and evaluating a new software tool. Yet, while information- and computer-science students are expected to bring experience or backgrounds in designated technical areas, humanities students are only expected to “have an open mind and a
passion to learn about new techniques.” The MA in Humanities Computing at the University of Alberta, faculty members Rockwell and Sinclair recall, was also designed with the realization that it would include a broad range of students from humanities, social sciences, and arts. Students need to deepen expertise in particular domains and be trained in technical skills as soon as possible. But, the program avoids limiting them to particular software packages and methodologies. It emphasizes, instead, understanding fundamental techniques and broad implications of technologies for manipulating digital images. In addition, students have the option of developing an interdepartmental specialization and pursuing a joint MA/MLIS that confers degrees in both academic arts and professional library and information science (“Acculturation,” 191–92).

Because it is preparing students for professional careers in academic settings, cultural institutions, and web-based professions, UCL’s MA/MSc program places a high priority on technical capacity. Yet, it also enrolls students with differing backgrounds: those in humanities needing to acquire skills in digital technologies, and those with technical backgrounds needing to learn about scholarly methods. Comparably, the MA in Digital Humanities at Loyola University Chicago has two converging tracks: one for students with a background in computer science and the other for students from humanities. Everyone takes six courses in common, but in order to achieve balance students in the humanities track must enroll in an “Introduction to Computing” course, with hands-on experience in basic coding, and do a practical computing project or a research paper related to the history and contexts of computing. For their part, students in the computing track take an approved graduate-level course in literature or another humanities discipline pertinent to their particular background and needs. To illustrate, a student in the Computer Science track working toward a career in libraries might take History 482: “Archives and Records Management.” A student preparing to work in communications might take English 415: “Media and Society” instead.

Like UCL, the collaborative master’s in Digital Humanities at Carlton University in Canada also takes advantage of its location for practicum components of the degree. At Carlton, students can enhance their existing degree programs in both disciplines (anthropology, art history, English language and literature, history, philosophy, and sociology) and in interdisciplinary areas (applied linguistic and discourse studies, film studies, French and Francophone studies, music and culture, public history, and
Canadian studies). Regardless of background, they undertake a piece of original research, while engaging with students and faculty from across the university. A practicum component allows them to take advantage of nearby public and private-sector organizations engaged in digital media production, game development, digital start-ups, the entertainment industry, and digitization projects in local libraries, archives, and museums.

Even with differing balances of technology and content, faculty in all contexts are mindful of the danger that technology becomes an end rather than a means. Students also need knowledge of humanities methodology and vocabulary. Only then, Joshua Sternfeld advises, is it possible “to preserve or create contextual layers.” Advanced subject knowledge at the graduate level may not be possible, but students need to be trained in basic practices and terminology. Moreover, they need to know that every decision—whether about formal design elements or which information to include—involves an act of interpretation. Recalling a course on digital historiography that was taught twice at UCLA, on “History, Media, and Technology,” Sternfeld reports the solution to the challenge of a diversified student audience was to limit historic thematic material in order explore the methodological nature of historiography in greater depth. Representations were narrowed to two periods: the Holocaust and the Cold War, though the framework could be adapted to any period or region with a body of digital or new media work (268, 270–71, 279–80).

Others weighed the question of balance at an online forum on “The Promise of Digital History.” Amy Murrell Taylor contends the most important skill in teaching students to do digital history is “thinking in bold and creative ways about how the technology can serve the interests of history.” Dan Cohen reports he does not even begin with technical skills. Instead, he prods students to ask questions about overall intent, the audience, ways to tailor a website or digital tool to their needs and expectations, and the genre of a digital resource such as an archive, a learning module, or a collaborative space. Students also need to consider what else has been done with respect to a particular project. Technical literacy matters, especially at an advanced level. Yet, a comprehensive vision of what a student or a practicing historian is trying to accomplish also matters. Details about web design, appropriate technologies, and other concerns follow from this initial framework. Sternfeld’s observations coupled with insights from the Digital History online forum underscore Mahony and Pierazzo’s caveat: “Skills training is not research training” (224). A more
comprehensive orchestration of the relationship of technology, content, and critical thinking is needed.

The plan for a program that was never offered posits a metaphor for the means-end relationship. The defining image of interdisciplinarity in the proposed master’s in Digital Humanities at the University of Virginia (UVA) was tractability, achieved through a dialogue of content and technological competence. Concentration Electives would have insured in-depth coursework in a humanities subject, making content “tractable” to computational methods. A student with a background and interests in medieval literature, for example, might select electives in medieval literature, history, and linguistics, then intern with a project in medieval studies and design a thesis that applied Humanities Computing tools and techniques to a problem in a particular text. Reflecting on why the course was not offered, John Unsworth reports the proposed model did not conflict with library science, journalism, and communication programs because UVA lacked such units. Many worthy projects also existed at Virginia, but more in parallel than with the coalescing force that led to a degree program at King’s College (Unsworth and Tупman, 235).

Theoretical and Critical Analysis

One of the most frequent words in descriptions of Digital Humanities programs is *application* of computing to materials and problems of humanities, affirming the prominence of Methodological Interdisciplinarity. Yet, Theoretical and Critical Interdisciplinarity also play important roles in two ways: epistemological reflection on the nature of technology and critique of its impact in the mode of cultural studies.

The word *application* implies instrumentality but, echoing the discussion of theory in chapter 1, the relationship is not a dichotomy. It is important to learn to make things, James Gottlieb acknowledges, but coding in and of itself should not substitute for understanding how projects are to be structured, built in order to share code and data with other projects, and constructed in ways others find compelling and influential. The MA program at King’s College emphasizes the capacity “to think with and against the computer,” not use it merely as a tool. The epistemological question of how we know what we know is developed throughout the program as a prompt for critical thinking about “combining” divergent perspectives of
computing and humanities. Reflection on both the capacities and limits of tools also bridges formal methods and techniques and the implications of applying them to source materials and problems of humanities. The PhD program, which focuses on a research problem in the primary discipline of a student’s bachelor’s degree, considers methodological, second-order knowledge that is discovered or created in the process of modeling a problem computationally.

Although a PhD is rare in this field, several lessons from King’s College London’s doctorate have generic value. In order to prepare students for handling more advanced technical needs, the Department of Digital Humanities offers technical courses in formats ranging from one-day immersion training to a twenty-credit master’s module and a weeklong course (Mahony and Pierazzo, 218–22). Recalling the experience of creating the degree program, Willard McCarty reports the newness and “high interdisciplinary” nature of the program meant students needed significant help in developing their proposals before making formal application. Because the British PhD is more research-based than its North American counterparts, McCarty and his colleagues also concluded they needed to introduce formal instruction in research skills the first year, although by design they have continued to allow for a range of instrumental uses of existing tools in speculative or theoretical projects (“The PhD”). In programs claiming to be “interdisciplinary,” explicit attention must also be paid to integrative process. Lack of explicit definitions and guidelines has been a longstanding weakness of individualized programs, especially, which often turn out to be more multidisciplinary or focused on the disciplinary specialization of a student’s advisor.

Other programs combine technological skills with cultural studies and critique. “Re-envisioning Diasporas” was a collaborative seminar between Swarthmore College and Ashesi University in Ghana. The primary themes included globalization, nationality, and the nature of identity in a diaspora. Students examined experiences of communities separated from their homelands and ways they are represented through historical, visual, aural, and literary sources from Turkey, Latin America, and West Africa. In the process, they also gained skills of using Skype for cross-cultural communication and technological tools of production and editing. In a different context, Katherine Harris conceptualizes DH as a way of bridging past and contemporary cultures. In studying 19th-century British literature, her students explore gaming as a way of discussing the technological upheaval
of the printing press in the early 1900s. They use tools not only to assess the 19th century but also create content that serves as a reflexive critique of the use of Twitter, Moodle, ClassSpot, and technology-enhanced teaching facilities (postings to “Day of Digital Humanities,” 2009 and 2010).

Georgia Institute of Technology’s School of Literature, Communication and Culture (LCC) exhibits a different balance of technical and cultural study. The school is the result of a bold interdisciplinary restructuring of an English Department with emphasis on cultural studies of science and technology. LCC offers a BS in science, technology and culture and a BS in computational media, an MS in digital media, an MS in human-computer interaction (HCI), and a PhD in digital media. The chair of LCC, Kenneth Knoespel, described digital media as a “common ground on which humanities scholars can use their special skills in interpretation, critical theory, close readings, and cultural studies to enhance and codirect projects with their colleagues in the sciences, engineering, and social sciences” (qtd. in Hayles, How We Think, 45). The master’s in human-computer interaction illustrates how components are integrated. It is offered collaboratively by three Schools: Interactive Computing, LCC, and Psychology. A combination of fixed and flexible coursework in a studio- and seminar-based curriculum places design within technical, cultural, aesthetic, and historical contexts. In addition to a common core, summer internship, and a master’s project, students take courses in their specializations (e.g., computing, digital media, or psychology), and electives (e.g., architecture, industrial design, cognitive science, computing, management, or policy studies). Design is configured as both a creative and an intellectual challenge. The keyword of interdisciplinarity in the program is *interplay*: between technology and culture and between critical analyses and design.

**Pedagogy and Learning**

“The term ‘digital pedagogy,’” Aaron Santesso contends, “has now achieved the same status as ‘interdisciplinarity’ or ‘entrepreneurial scholarship.’ We express enthusiasm about it publicly, while privately confessing that we don’t exactly know how to do it.” Despite uncertainty, though, descriptions abound. Steven Mintz’s periodization of stages of engagement in the discipline of history provides an overview of the changes that are occur-
ring. Stage 1.0 consisted of communication and course-management tools, such as e-mail, online syllabi, Web-CT, and Blackboard, supplemented by websites such as History Matters, Lincoln/Net, and his own Digital History site. They provided a rich storehouse of documents, music, historic images, and film clips. Stage 2.0 was marked by hands-on inquiry- and problem-based projects designed to let students actually “do” history. Using Richard B. Latner’s Crisis at Fort Sumter, for instance, they could read information available to President Lincoln at the time of his election and compare decisions they make with decisions he made at critical junctures in his presidency. In the current Stage 3.0, active learning, collaboration, and enhanced interaction are being emphasized in the digital landscape of wikis, blogs, mash-ups, podcasts, tags, and social networking. Stage 4.0 lies on the horizon but is foreshadowed by three-dimensional virtual-reality environments that allow students to navigate and annotate lost historical settings, such as the 1893 World’s Columbian Exposition in Chicago.

Cathy Davidson suggests that new modes of learning might be called Learning 2.0 and, along with David Theo Goldberg, articulates ten principles for redesigning learning institutions in the digital age (summarized):

1. **Self-learning** through browsing and scanning occurs when working with multiple sources of knowledge and information.

2. **Horizontal structures** have moved away from top-down instruction to collaborative learners capable of multitasking and working together on projects.

3. **The move from presumed authority to collective credibility** shifts traditional reliance on authorities or certified experts to collaborative and interdisciplinary learning.

4. **De-centered pedagogy** encourages collaborative knowledge-making and collective pedagogy based on collective checking, inquisitive skepticism, and group assessment.

5. **Networked learning** shifts from competitive to cooperative forms in a vision of the social that stresses cooperation, interactivity, mutual benefit, and social engagement.

6. **Open-source education** moves from copyright-protected publications to networked learning in an “open source” culture.

7. **Learning as connectivity and interactivity** reinforces networking through file sharing, data sharing, and seamless communication.

8. **Lifelong learning** acknowledges the speed of change in a digital world
that requires individuals to keep learning anew, face novel conditions, and adapt at a record pace.

(9) *The conception of learning institutions as mobilizing networks* shifts from learning as a bundle of rules, regulations, and norms governing actions within a structure to networks that mobilize flexibility, interactivity, and outcomes.

(10) *Flexible scalability and simulation* means being open to various scales of learning possibilities, from the small and local to wide and far-reaching constituencies.  
(Davidson and Goldberg, 26)

Although it is not named specifically, interdisciplinarity is implicated throughout this list. (2) *Horizontal structures* flatten older boundaries, facilitating integrative learning while also refiguring the teacher-student relationship to broaden expertise. (5) *Networked learning* stresses cooperation, interactivity, mutual benefit, and social engagement. (7) *Learning as connectivity and interactivity* reinforces networking through file-sharing, data sharing, and seamless communication. (8) *Lifelong learning* acknowledges the speed of change in a digital world that requires individuals to continue grappling with novel conditions and adapt quickly. (9) *The conception of learning institutions as mobilizing networks* shifts from learning as a set of rules, regulations, and norms within a structure to networks that mobilize flexibility, interactivity, outcomes, and, we can add, respond more quickly to emergent fields. (10) *Flexible scalability and simulation* means being open to multiple scales of learning possibilities, from the small and local to wide and far-reaching constituencies.

Digital and interdisciplinary learning share other traits as well. They are both active and dynamic. Group work and projects are common and, echoing the constructivist theory of learning, students build new knowledge through exploration and the actual “doing” of a subject rather than passive receipt of predetermined meaning. Innovative pedagogies are common as well, including collaborative-, inquiry-, discovery-, and problem-based learning. And, a shift from “teaching-” to “learner-centered” classrooms occurs as the traditional model of telling, delivering, directing, and being a “sage on the stage” is expanded in the roles of a mentor, mediator, facilitator, coach, and guide (Klein, “Introduction,” 13–15). Davidson cites the example of Mobile Musical Networks, a course at Princeton University led by two professors from music composition and computer science. They
worked with students to co-develop networked portable musical laptops so musicians could co-compose, improvise, perform online simultaneously, and customize laptop instruments together. As they rethought the common problem of time tag in musical composition and in engineering audio transmission, the hierarchies placing science over art and teacher over student flattened, performance and writing code combined, and thinking and doing merged (“Humanities and Technology,” 209, 214–15).

The prominence of project-based learning underscores the active nature of Digital Humanities. The definition of *project* in the syllabi that Spiro examined is wide, including a research paper, video, digital history resource, collaborative multimedia, and grant proposal (69). In addition, many courses involve hands-on learning, leading discussion, and peer review. Collaboration was also an explicit learning outcome in roughly fifteen courses, and many courses required blogging. Sternfeld’s account of UCLA’s course on “History, Media, and Technology” affirms this variety, with final projects ranging from documentaries, geospatial visualizations, and a virtual museum exhibition to children’s literature, board games, and film (275). In the undergraduate DH minor at UCLA students work in teams doing research with real-world applications, using tools and methodologies such as 3-D visualization, data mining, network analysis, and digital mapping. Students in the MA program at Loyola University Chicago also engage in hands-on training in workshop- or seminar-based classes, gaining skills of text editing and text encoding, e-publishing and platforms, programming, interface design, project management, and archive construction. Moreover, collaborative learning is encouraged at every stage.

The opportunities digital environments afford, Burdick et al. emphasize, also expand what qualifies as knowledge and methods for producing it in student assignments: “This implies that the 8-page essay and the 25-page research paper will have to make room for the game design, the multiplayer narrative, the video mash-up, the online exhibit and other new forms and formats as pedagogical exercises” (24). Stefan Sinclair’s graduate seminar combined reflective weekly blog entries (30 percent of grade); individual presentations using a digital technology (15 percent); individual mini project write-ups of efforts to digitize, prepare, and analyze a textual corpus (15 percent); a group project with a significant digital component (30 percent); and individual seminar participation (10 percent). Mark L. Sample also integrates public writing into his classes in lieu of traditional
essays (404–5). Trevor Owens treats blogging as a genre of public writing with greater visibility than traditional essays (409). And, in a unique collaboration centered on the poetry of Walt Whitman, Matthew Gold and Jim Groom participated in a four-university experiment in creating “loosely networking learning spaces.” This approach, they found, reimagines possibilities for working on related projects in separate places through an “open and porous learning ecosystem” (406–7).

In addition, interdisciplinary studies and Digital Humanities cultivate similar skills. The fundamental learning actions in Clarke and Agne’s account of Interdisciplinary High School Teaching are asking questions and constructing answers in a process that entails grappling with uncertainty, working with multiple criteria, and arriving at nuanced judgments and interpretations. In college, Klein and Newell highlight exploration and question posing, experiential learning, decision making and problem solving, comparing and contrasting different perspectives, then synthesizing them (407–8). Teachers also report evidence of increased motivation and ability to deal with complex issues, a more reflective stance, greater creativity, and enhanced critical thinking. At higher levels, students become more reflexive about the nature of disciplines. And, they are able to locate and to work with pertinent information, to compare and to contrast different methods and approaches, to clarify how differences and similarities relate to a task, to discern patterns and connection, and to create an integrative framework and holistic understanding of a theme, question, or problem.

Digital Humanities places a greater burden on learning how to use tools. However, Wosh, Hajo, and Katz contend, students must also master the core skill sets of relevant knowledge domains. In NYU’s Archives and Public History Program that meant an interdisciplinary combination of historiographical content, museological approaches, and information theory (81). Although contexts vary, DH courses typically combine an introduction to the field with particular tools and methods—whether text editing or visual presentation—in order to work in a designated area—whether history or performance art. Since answers to questions and solutions to problems are typically dependent on context, off-the-shelf approaches are insufficient. Some DH courses also include training in team skills. “Digital thinking,” Davidson exhorts, “is a mode of thinking together.”

Taken together, the characteristics that have been identified produce a set of outcomes in DH teaching and learning as interdisciplinary practice:
• *technical competence*: to use pertinent tools and programming languages, to write code as needed, and to engage with data, databases, and platforms

• *navigation*: to identify and use relevant sources of knowledge and information from multiple disciplinary, professional, or interdisciplinary sources as well as textual, visual, and aural modalities

• *evaluation*: to weigh the relevance and adaptability of multiple contents, tools, methods, modes of presentation, and interpretive approaches

• *integration and synthesis*: to achieve a working balance of technological and humanistic components, and to create a new design, analysis, or interpretation that addresses a complex question, problem, topic, or theme

• *critique*: to employ higher-order critical thinking skills and conduct critical analysis of media content, the impact of new technologies, and the design process

• *collaboration*: to work in teams, involve consultants when needed, manage projects, and negotiate institutional resources, infrastructure, and sustainability.

These are not separate items on a checklist. In teaching Digital Humanities in an English department, Jentery Sayers found that students needed to be simultaneously *strict* (in text encoding) and *flexible* (in project development), *abstract* (in creating data elements or categories for data modeling) and *concrete* (in data gathering), *technical* (in computation) and *critical* (in literary and cultural studies). In his graduate seminar on digital literary studies, the focus was multimodal scholarly communication. The course blended multiple media (maps, video, audio, graphs, code, images, and text) with varied modes of attention (close listening, distant reading, distraction, computer vision, and repeated watching). Students also combined knowing and doing when responding to prompts for multimodal method exercises.

Much has been written about the learning style of the *born digital* generation, a term for youth born after 1987. They were the first generation, Balsamo recalls, to grow up in a world of portable computers, networked communications, and creative graphics applications. By the time they were reaching school age they were experiencing daily life as a scene of constant shifts among networked contexts and performing creative synthesis in data
mining, remixing, and modding. Moreover, they were learning outside of school, and as “just-in-time learners” finding something by mining their digital and social networks. In the process, they cross knowledge communities, synthesizing from disparate sources (138–41). Rob Clark, dean of the Hajim School of Engineering and Applied Science at the University of Rochester, describes today’s college students as “less interested in boundaries between disciplines.” Davidson concurs in describing the mobilizing features of interdisciplinarity in HASTAC as “revaluing, replaying, and remixing across, between, and among opposite areas.” Today’s youth do not intuitively distinguish between “art” and “science” in everyday and information learning. Someone might be writing code for a multiplayer game or for a better interface on a MySpace page then in the next moment design a new avatar for Second Life (“Humanities 2.0,” 214).

Optimism, however, is checked by limits. Wosh, Hajo, and Katz found the assumption that a new generation of “digital natives” has superior technological skills was not borne out in survey data for restructuring NYU’s Archives and Public History Program. Students lacked familiarity with digitization methods, standards, and basic terms such as metadata, and their experience with social-networking tools was uneven (82–83). They need to know, Balsamo adds, how to critique the information flows they remix when working with multiple modalities, networked and physical spaces, and open and collaborative environments (139–57). In his book on Teaching History in the Digital Age, T. Mills Kelly recounts the cautionary tale of a student who “fixed” newsreel footage of the Nuremberg trials. He removed most of the original triumphalist music and substituted new audio, including the famed bass notes from the movie Jaws and parts of Mozart’s Requiem. After discussing why the original source was more appropriate, Kelly reports, as much as half the class still sided with the student’s argument that his mash-up was “better.” That said, Kelly urges, it is important to meet students where they are at while teaching them how to use sources critically (2–3, 51).

Recalling Davidson and Goldberg’s principles for redesigning learning institutions, Self-learning through browsing and scanning is easier today because of powerful tools for locating knowledge and information. Open-source education is making a wider range of materials and interpretations accessible on a global scale, and the move from presumed authority collective credibility has broadened the notion of expertise. Yet, Jill Vickers cautions, new tools for navigating and collaborating reinforce the need for guide-
lines to determine what constitutes reliable knowledge in interdisciplinary work. Ease of access does not guarantee quality of use (“Diversity”). Moreover, even the best of “federated” search engines, tailored thesauri, RSS feeds, adaptive filters, spiders, and tools for sharing do not automate the process of integration.

Strategies

Weighing the importance of institutional structures for the future of Digital Humanities, Katherine Hayles identified two strategies: assimilation and distinction:

Assimilation extends existing scholarship into the digital realm; it offers more affordances than print for access, queries, and dissemination; it often adopts an attitude of reassurance rather than confrontation. Distinction, by contrast, emphasizes new methodologies, new kinds of research questions, and the emergence of entirely new fields. (Hayles, How We Think, 46)

The King’s College Department of Digital Humanities (formerly the Center for Computing in the Humanities [CCH]) illustrates the strategy of assimilation. CCH evolved from an undergraduate teaching major into a research unit and graduate degrees. Hayles attributes its success to embedding collaborative projects within historically oriented humanities research. The center also has its own robust funding profile, so does not compete with traditional units for financial support. In contrast, the School of Literature, Culture, and Communication (LCC) at the Georgia Institute of Technology employs a strategy of distinction anchored in preparing students for careers in media research in the academy and industry. LCC also operates in a technical institution with strong engineering and computer science departments. And, digital media is viewed as a separate field rather than an integral part of humanities research. Neither strategy, Hayles cautions, should be considered superior to the other without considering specificities of local context. Assimilation and distinction are two ends of a spectrum. Hybrid programs also exist: including the program in electronic writing at Brown University; Design Lab at the University of Wisconsin-Madison; Virginia Commonwealth University’s PhD pro-
gram in media, art, and text; the Maryland Institute for Technology in
the Humanities at the University of Maryland; and the Institute for Ad-
vanced Technology in the Humanities at the University of Virginia (How
We Think, 46–53).

Institutional niche also plays a role in shaping strategies. The advance
of Digital Humanities in liberal-arts institutions, Bryan Alexander and Re-
becca Frost Davis (2012) report, has been “uneven” and “partial.” DH is
usually taught within disciplines, although it is part of a humanities pro-
gram at the University of Puget Sound. Smaller institutions typically lack
the social capital and infrastructure needed to mount and sustain DH cen-
ters that anchor community building, expertise, advocacy, and team-based
projects. DH centers have formed in liberal-arts settings, though, including
the Digital Scholarship Lab of the University of Richmond, the Digital Hu-
manities Initiative of Hamilton College, and the Center for Digital Learn-
ing and Research at Occidental College. When centers emerge in this sector
of higher education the liberal-arts signature is evident. At Hamilton and
Occidental, for example, there is a strong pedagogical focus. Liberal-arts
institutions, Alexander and Davis also find, highlight the effectiveness of
“unbundled” practices and integration into existing structures that central-
ize support for computing and information access.

To illustrate: at Wheaton College, Willamette University, Lewis and
Clark College, Occidental, and Puget Sound the library is that structure.
All students in DH courses, Alexander and Davis also remind us, will not
become “digital humanists.” The value of the field for their careers and
civic engagement is grounded in the learning values of liberal arts. Borrow-
ing a term from software development, they suggest we may be “witnessing
a fork in the digital humanities development path”: “Liberal arts campuses
have taken the digital humanities source code and built a different applica-
tion with it than their research university peers are currently constructing”
(383). Instead of research and products, they emphasize teaching and learn-
ing. At the same time inter-institutional projects provide research support,
evidenced by Swarthmore College’s collaboration with the University of
Pennsylvania on the Early Novels Database project. William Pannapacker
also notes other areas for collaboration including curricular innovation, re-
gional networking, resource sharing, professional development, collabora-
tive projects, and enlarging the concept of “digital humanities” to “digital
liberal arts.”

The absence of a tradition of Digital Humanities requires other strate-
gies. When Lazslo Hunyadi and his colleagues tried to establish DH at the University of Debrecen in Hungary, they learned how difficult that can be without an established history in a country, recognition as a discipline, and formal accreditation. Moreover, they had to counter suspicion they were doing information science, not humanities-oriented teaching and research integrated with information technology. Individuals were teaching subjects with some applied computational methodology. However, collaboration and professional relationships were lacking. After weighing options, Lazslo and his colleagues decided to establish a virtual Center for Digital Humanities relying on existing teaching positions with established departments, while also offering a service running courses in Humanities Computing. They selected two specializations of broad interest for the MA in Digital Humanities: cultural heritage preservation and language technology. Students can enter the MA program with an undergraduate degree in modern or classical languages and literatures, or in history and ethnology. Once enrolled, they encounter disciplines spanning classical humanities, information science, music, architecture, and sciences (“Collaboration”).

Even though lack of a center creates a disadvantage, with no central place for networking, Wosh, Hajo, and Katz found that a curricular project has the side benefit of reaching out to identify “kindred souls” and similar projects. For NYU’s Archives and Public History Program that meant connecting with other humanities departments and the Information Technology Service. They were able to leverage the history department’s experience in archival management and public history. Then, when a professional development grant from the National Historical Publications and Records Committee ended, the library started a Humanities Computing interest group. The radical stance on interdisciplinarity demands nothing short of transformation. Yet, Saklofske, Clements, and Cunningham advise, change might be accomplished more easily if presented as “an evolutionary, rather than revolutionary, process.” They suggest starting small, gaining momentum through collaborative activities, resource building, integrating DH into existing courses, modifying existing program requirements, and other opportunities for modeling cross-disciplinary conversations. Digital Humanities, they contend, is not a discipline or end in itself. It is a means of scholarship and pedagogy (323–29).

The local political economy of a campus may also require adjusting strategies. When Ryan Cordell assumed a new position at St. Norbert College, he submitted a course proposal for “Introduction to Digital Hu-
manities.” However, the curriculum committee rejected it, deeming the proposed course “a methodological mishmash.” One of the lessons Cordell drew is that colleagues “understand ‘interdisciplinary’ from the perspective of their disciplines.” His revised proposal, “Technologies of Text,” recast the proposal as a “literature course” by incorporating insights that helped them see “lines of disciplinary intersection.” It was approved and eventually taught. This form of “interdisciplinarity,” as Cordell calls it, is an incursion into a curriculum resistant to DH methodologies. It is a “‘pandemic’ curriculum reform” capable of reshaping institutions beyond DH centers, by foregrounding the traditional disciplinarity of a course while building new methodologies into practice. Proponents of radical interdisciplinarity are dismissive of embeddedness, branding it an accommodationist strategy. Yet, Cordell and others reply, even as DH grows “the vast majority of its practitioners will work within institutional structures formed by traditional humanities categories.”

That said, more radical change occurs on other campuses, akin to the transdisciplinary refiguration of Georgia Tech’s English department. Launched in 1998 with seed money from the NEH, the Transcriptions initiative in the Department of English at the University of California, Santa Barbara, integrates curriculum, a research agenda, a technology model, support resources, and special events. Directed by Alan Liu, Transcriptions is modeling a humanities department of the future. The undergraduate specialization in Literature and Culture of Information asks students to grapple with the information culture both intellectually and practically, while working in new spaces for advanced information technology. The underlying metaphor of transcription signifies the multiple integrations that occur: between past and present understanding of what it means to be a literate, educated, and informed person; and between information culture and literary history. The project also advances understanding of the way information technology remolds interrelationships and methods of existing academic fields through collaborative work modes, themes of information technology, and research activities that transect the academy and professional sectors of business and private industry.

Regardless of strategy, it is important to be explicit about interdisciplinarity. The Comparative Media Studies program at MIT was based on a sixfold comparative approach: across media (including multi-modal relationships), across national borders (including cross-cultural dynamics, the political economy of global culture, and new media styles and genres),
across historical periods, and three other comparative frames fundamental to this book. Comparison Across Disciplines, in particular, engages “radical interdisciplinarity” by encouraging students to mix and match approaches from humanities and social sciences in search of answers to questions about cultural and social impacts of media. It brings together a humanistic tradition of thinking about media content, genre, storytelling, and pedagogy with a qualitative social science tradition of analyzing media context, culture, society, and community. Comparison Across Making and Thinking bridges theoretical knowledge and hands-on learning in producing and critically evaluating tangible products. Comparison Across Perspectives invokes trans-sector transdisciplinarity as students encounter “front-line perspectives” on current media change in dialogue with representatives of industry, government, education, arts, and public institutions.

Drawing lessons from the field of cultural studies, Goodwin and Woolf caution that the limits of individual competence are “the weak link in the chain of cross-disciplinary reasoning.” As students move beyond coursework to dissertations, the problem of expert advice arises. For all the anti-disciplinary talk of dismantling specializations, in the absence of expertise the risk of dilettantism looms. “There are no short cuts to knowledge,” Goodwin and Woolf admonish (138–40), for teachers and students alike. Short-term certificate programs are becoming more popular for picking up DH training, along with new minors. However, the capacity for “informed decision making” at the heart of the master’s program at University College London does not result from short courses and modules. Students need sustained experiences in selecting tools and content for a particular task then designing an integrated approach that is greater than the simple sum of the parts. Moreover, Claire Warwick admonishes, without a core teaching program, Digital Humanities will continue to struggle to claim status as a discipline (208), and, we can add, an interdisciplinary field with a strong institutional foothold.

Speaking on the topic of “Becoming Interdisciplinary” at the 2013 meeting of the Alliance of Digital Humanities Organizations, Willard McCarty contended discussions of the ontological meaning of interdisciplinarity and the nature of collaboration do not help individuals understand what the work entails. To argue that the interdisciplinarity is poorly understand, as he does, sidesteps a sizable body of work on integrative process and dynamics of communication. Yet, related insights are underutilized in DH curricula. Reframing interdisciplinary research as a way of acting, Mc-
Carty argues, is more helpful than the abstract noun “interdisciplinarity.” It shifts attention to finding suitable pidgins for negotiating the “trading zone” between a discipline and computing, understanding how disciplines operate while being alert to their refiguration, and honing skills of interdisciplinary navigation. In his own teaching practice, McCarty highlights an ethnographic direction, treating disciplines as “epistemic cultures” that need to be explored to understand their perspectives from a “native’s” view, while realizing what one’s own discipline has to offer.

No discussion of education would be complete without factoring in the growing number of professional development opportunities for scholars and teachers who are already employed. Earning another degree is one way of gaining expertise. However, the more typical means are short-term events for learning new skills and content. DH centers and workshops at the conferences of DH organizations are key sites, along with THAT-Camps, hackathons, and special sessions at annual meetings of discipline-based organizations. Formats range from introductions to the field and project demonstrations to hands-on workshops on project design and implementation and training in particular technologies and programming languages. Online services such as DH Answers are further sources of help, and DevDH.org offers support for projects and grant writing in a multi-modal repository of training materials, lectures, readings, examples, links, and other resources. In recent years the number of summer institutes and schools has also increased. Older forums such as the Digital Humanities Summer Institute at the University of Victoria are now joined by the European Summer School in Digital Humanities, the Digital Humanities Summer School in Switzerland, and initiatives such as the Postcolonial Digital Humanities Summer School’s collaborative online course (#dhpoco) and Brown University’s conference on “Teaching with TEI.”

Inter-institutional partnerships constitute a further source of professional development. Ithaka S+R, a service of the non-profit organization ITHAKA, provides resources and services to help the academic community and other organizations operate in online environments. The DH training network links efforts across summer schools, and the Praxis network administered by the Scholars’ Lab at the University of Virginia Library connects graduate and undergraduate programs at several colleges and universities. Preliminary surveys for the Praxis network indicated that many graduate programs were not preparing professionals adequately for current jobs, including skills of project management, collaboration, and
functioning in related work cultures. Local programs have unique features, but they share a common focus on practical skill training, interdisciplinarity, and, a focus of the next chapter, collaboration.

Clustered Links for Chapter 5 in Order of Appearance

CUNY DH syllabus collection: http://cunydhi.commons.gc.cuny.edu/2011/06/06/digital-humanities-syllabi/


Zotero DH Education group: http://www.zotero.org/groups/digital_humanities_education


UCL (University College London) master’s degree: http://www.ucl.ac.uk/dh/courses/mamsc

David Michelson’s “Introduction to Digital Humanities” course site: http://introtdigitalhumanitiesspring2011.digress.it/

Alexander Huang’s DH seminar: http://www.inthemedievalmiddle.com/2013/01/digital-humanities-gw.html

John Unsworth’s DH seminar: http://www.brandeis.edu/now/2013/january/new_courses.html

John Theibault’s “Introduction to Digital Humanities” course offered at Stockton College in spring 2011, though the original link is now dormant: http://wp.stockton.edu/gah3223spring2011/about/

Loyola University Chicago’s Center for Textual Studies and Digital Humanities: http://www.ctsdh.luc.edu/?q=ma_digital_humanities

Carleton College’s MA in Digital Humanities: http://www6.carleton.ca/dighum/about/

Macalester College’s Media and Cultural Studies major: http://www.macalester.edu/academics/mcs/


Plan for master’s in DH at University of Virginia: http://people.lis.illinois.edu/~unsworth/laval.html

James Gottlieb’s comment on coding: http://www.jamesgottlieb.com/2012/03/coding-and-digital-humanities/

King’s College London’s Department of Digital Humanities: http://www.kcl.ac.uk/artshums/depts/ddh/study/index.aspx
Swarthmore College and Ashesi University’s collaboration: http://www.swarthmorephoenix.com/2012/02/02/news/swatties-re-envision-the-meaning-of-diaspora


Georgia Institute of Technology’s School of Literature, Media, and Communication: http://www.lmc.gatech.edu/


UCLA’s Digital Humanities minor: http://www.cdh.ucla.edu/instruction/dhminor.html

Stefan Sinclair’s graduate course in DH: http://stefansinclair.name/llcu-601–1/

Thomas DiPiero’s comment on students today: http://www.rochester.edu/news/show.php?id=4064

Ryan Cordell’s posting on DH, Interdisciplinarity, and Curricular Incursion: http://ryancordells.us/blog/2012/02/20/dh-interdisciplinarity-and-curricular-incursion/

Transcriptions at University of California, Santa Barbara: http://transcriptions.english.ucsb.edu/index_netscape.asp

MIT’s Comparative Media Studies/Writing: http://cmsw.mit.edu/

Digital Humanities Questions and Answers: http://digitalhumanities.org/answers/

Development for the Digital Humanities: http://www.devdh.org

#dh poco Summer School: http://dhpoco.org/blog/2013/05/20/coming-soon-dh-poco-summer-school/

European Summer School: http://www.culingtec.uni-leipzig.de/ESU_C_T/node/97

Digital Humanities Summer Institute: http://dhsi.org/

Willard McCarty’s address on “Becoming Interdisciplinary”: http://dh2013.unl.edu/abstracts/ab-107.xml

Ithaka S+ R at ITHAKA. http://www.sr.ithaka.org/

The Praxis Network: https://news.virginia.edu/content/uva-digital-humanities-training-program-establishes-new-network