

Digital humanities degrees and supplemental credentials in Information Schools (iSchools)

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The digital humanities (DH) is an emerging field of teaching and research that invites modern technologies to address traditional humanities questions while simultaneously making space for humanistic critiques of those technologies. A natural relationship exists between DH and the field of information studies (the iField), particularly surrounding their common focus on the interface between humans and computers, as well as subfields such as the organization of information, libraries and archives, data preservation, and information in society. Thus, we propose that iField programs in universities should take an active role in DH education. We are particularly interested in programs that are officially Information Schools (iSchools), members of the international iSchools Organization. Our research began as part of a DH curriculum committee convened by the iSchools Organization. To support iSchool engagement in DH education, we have inventoried and analyzed the degrees and supplemental credentials offered by DH education programs throughout the world. Our study deployed multiple data collection methods, which included conducting both ad hoc and comprehensive website surveys, querying an online DH catalog, and inviting members of the iSchools Organization to participate in an online questionnaire. This work has revealed several common patterns for the current structure of DH programs, including the various types of degrees or supplemental credentials offered. We observe that iSchools have a significant opportunity to become more engaged in DH education and we suggest several possible approaches based on our research.

Keywords: Digital humanities, iSchools, iField, interdisciplinary, degrees and credentials

1. Introduction

For the past several decades, technology and instant communication have increasingly transformed our daily lives in all contexts – professional, commercial, academic, and beyond. Higher education must keep pace with these wider societal changes to remain relevant in any academic discipline, especially the humanities. Interdisciplinary approaches are particularly well situated to help the humanities address today's societal challenges from within universities. Information Schools (iSchools) and digital humanities (DH) programs, which operate at the intersection of humanity and technology, are naturally positioned for synergistic relationships and interdisciplinary work (Bartlett & Dalkir, 2020; Casarosa et al., 2020). The goal of this paper is to

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33 contribute to research that can guide universities in implementing DH education,
34 particularly in iSchools (Terras, 2006; Spiro, 2011; Alexander & Davis, 2012; Sula
35 et al., 2017). Here we limit our focus to iSchools, which we define as programs
36 that are officially members of the international iSchools Organization. Our approach
37 is to outline potential models for offering DH education and credentials through
38 an examination of examples worldwide. Based on our results, we recommend that
39 iSchools take a more active role in establishing and participating in DH educational
40 programs at their universities.

41 Although challenging to precisely define, the field of digital humanities is generally
42 recognized as an engagement with computational technology to enhance research
43 and teaching in traditional humanities fields. By bringing together the human and
44 the computer, DH helps the humanities better address societal problems. The Euro-
45 pean Union, for example, recognizes humanities and social sciences as “essential to
46 maximize the returns to society from investment in science and technology” (Eu-
47 ropean Commission, 2016). The study of digital information takes diverse forms
48 within universities, with programs often developing out of library science, business,
49 or computer science departments. Here, we focus specifically on formalized academic
50 programs in the information studies field (iField) that have opted for membership in
51 the international iSchools Organization (iSchools Organization, 2020). As of October
52 2020, the 117 iSchools at universities across the world offer coursework and degrees
53 supported by faculty who conduct research in the iField.

54 This paper outlines programs that offer DH degrees and supplemental credentials,
55 particularly those associated with iSchools. Here, we look at various combinations
56 of formalized programs, degrees and certificates, academic levels (undergraduate
57 versus graduate), and the parts of the university that host DH curricula as well as
58 their collaborators within the university. These official structures underpin all types
59 of DH education for students in a university. Degrees usually include the bache-
60 lators major at the undergraduate level, and the masters or doctoral at the graduate
61 level. Supplemental credentials – official acknowledgments on transcripts earned
62 through the completion of a small program of coursework that is separate from
63 the main degree – include minors at the undergraduate level and certificates at
64 the graduate level. Our research developed out of our work on the iSchools Dig-
65 ital Humanities Curriculum Committee (iDHCC), an official panel of international
66 teacher-researchers convened by the iSchools Organization to study DH curricula in
67 and beyond iSchools. Our methods involve the examination of university websites,
68 the querying of an online catalog of European DH education, and a questionnaire
69 developed by the iDHCC and targeted at iSchools. These data were collected between
70 February 2019 and October 2020. In this paper, we first review prior research on
71 DH as an educational field, including a brief terminological review, and introduce
72 the official iSchool classification. Next, we describe the methods used for data col-
73 lection and analysis. Finally, we present and discuss our results and their potential
74 implications for how iSchools should engage with DH educational programs at their
75 universities.

76 2. Background

77 2.1. Digital humanities

78 Digital humanities as a distinct academic field takes on fluid forms and definitions.
79 For example, a volume entitled “Defining Digital Humanities” (Terras et al., 2013)
80 highlights the diversity of topics covered in conference talks, essays, and blog posts
81 about this subdiscipline and its activities. Descending from the field of Humanities
82 Computing, whose origins reach back to the first computers of the late 1940s, the term
83 “Digital Humanities” emerged in the early 2000s to differentiate higher-level research
84 from basic digitization (Busa, 1980; Vanhoutte, 2013; Nyhan & Flinn, 2016). The
85 *Oxford English Dictionary* (“Digital humanities,” 2020) defines DH as “an academic
86 field concerned with the application of computational tools and methods to traditional
87 humanities disciplines such as literature, history, and philosophy.” Here, we utilize
88 a broad definition of DH as an area of scholarly activity at the intersection of the
89 humanities and computation, while also foregrounding the applications of digital
90 tools and methods. By producing and deploying new software and techniques, DH
91 opens novel approaches to teaching and research while simultaneously examining and
92 critiquing how these innovations impact various aspects of cultural heritage and digital
93 culture (Berry, 2012; Liu, 2013). Thus, DH both employs information technologies in
94 the pursuit of the humanities, and subjects technology to humanistic interrogation.

95 More concrete definitions for DH often rely on illustrative examples in specific
96 domains to demonstrate the wide variety of topics that fall under this heading. In
97 this vein, we can point to how DH involves the digitization of archaeological objects
98 and the establishment of related infrastructures to curate online collections and share
99 information about objects across institutions (Smith et al., 2014; Cobb et al., 2019).
100 This work can enable data mining on web archives or social media datasets, relying
101 on a process of knowledge representation that spans acquiring, encoding, organizing,
102 presenting, and linking data (Beck & Neylon, 2012; Buccellati & Kansa, 2016). DH
103 also engages with the design of user interfaces for interactive access to and digital
104 publication of data, underpinning the critical reflexive dimensions of digital trans-
105 formation in a wide range of contexts. In fields like archaeology, DH methods target
106 both digitized and born-digital materials, including text, multimedia, and 3D repre-
107 sentations of physical objects and spaces (Roosevelt et al., 2015). DH approaches thus
108 unite traditional humanities disciplines (archaeology, history, philosophy, linguistics,
109 literature, art, music, and cultural studies) with computing tools (hypertext/media,
110 data visualization, information retrieval, statistics, 3D modeling, data/text mining,
111 digital mapping, and spatial analysis). In these intersections we see DH scholars not
112 only using computational methods to answer traditional research questions, but also
113 developing new questions that can be addressed with pioneering approaches that are
114 enabled by this digital transformation of knowledge creation (Kansa & Kansa, 2021).

115 Internationally, DH has developed its own character as a distinct academic field,
116 which includes specific publications, education programs, job opportunities, organi-
117 zations, and conferences. Several textbooks now cover DH and journals in the field

118 include *Digital Humanities Quarterly* (DHQ), *DHCommons*, *Digital Scholarship*
119 *in the Humanities* (DSH), and the *Journal of Digital Humanities* (JDH), to name a
120 few. The number of DH programs at the bachelors, masters, and doctoral levels has
121 grown steadily over the last few decades, especially since 2008, as will be described
122 below. The Alliance of Digital Humanities Organizations (ADHO), established in
123 2005, acts as a key international association supporting DH research and teaching. It
124 advises member associations around the world, including the European Association
125 for Digital Humanities (EADH), which has overseen an annual DH conference since
126 2006. Particular regions of Europe also maintain local associations under EADH,
127 such as Digital Humanities in Nordic Countries (DHN), which has organized annual
128 conferences since 2016. Another constituent organization of ADHO is centerNet, an
129 online international network formed in 2007 to link DH centers across the world.
130 The centerNet now includes 200 centers at universities like Stanford, the Univer-
131 sity of Pennsylvania, Brown, the University of North Carolina at Chapel Hill, and
132 Oxford (<https://dhcenternet.org/>). A Pan-European infrastructure for arts and hu-
133 manities scholars called DARIAH (Digital Research Infrastructure for the Arts and
134 Humanities) has facilitated collaborative DH projects since 2006. Two of the main DH
135 organizations in North American are the Humanities, Arts, Science, and Technology
136 Alliance and Collaboratory (HASTAC) and the Association for Computers and the
137 Humanities (ACH), which is part of ADHO.

138 2.2. *iSchools*

139 The field of information studies (iField) investigates how humans interact with
140 digital information and the resultant impacts on society. Formal programs in the
141 iField have developed gradually over time and are associated with other academic
142 disciplines such as computer science, business, and especially library science (Bartlett
143 & Dalkir, 2020). The origins of the iSchools Organization are often traced to a
144 small set of US universities with library or information science programs that began
145 communicating with each other in the late 1980s (Larsen, 2008; Dillon, 2012).
146 These programs began conceiving of an iField that built upon the traditional roles
147 libraries played in the organization, preservation, and sharing of knowledge. Over
148 time, additional universities joined the trend towards establishing iField programs.
149 The first decade of the internet, beginning around 1995, witnessed a widespread
150 recognition of the potential of digital communications to transform the conventional
151 functions of libraries and other information brokers. This shift in thought provided the
152 impetus for several schools of information to join together in an official interuniversity
153 and international organization. Thus, in 2005 the iSchools Organization was officially
154 established to enhance communication among iField programs at many universities.

155 Among the goals of the iSchools Organization are communicating the purpose
156 and value of the iField to university administrators and others, preparing students
157 for contributing to a society where digital information is exploding exponentially
158 each year, and enhancing cross-university research (Larsen, 2008). To facilitate this

159 latter topic especially, the Organization also began the iConference in 2005, an annual
160 forum for people to share work and develop networks. The iSchools Organization has
161 grown to include over 100 schools from around the world, and the iConference has
162 become a major academic event.

163 The members of the iSchools Organization share “a fundamental interest in the
164 relationships between information, people, and technology” (iSchools Organization,
165 2020). Information is central to today’s society and, by extension, to human life.
166 Thus, a connection between iField and humanities programs is a natural space for
167 shared advancements. One noteworthy historical connection between DH and iSchools
168 centers on Dr. John Unsworth, one of the coeditors of the 2004 book *A Companion*
169 *to Digital Humanities* that popularized the term DH. Unsworth was at that time the
170 Dean of the Graduate School of Library and Information Science at the University
171 of Illinois at Urbana-Champaign, a prominent North American iSchool (Schreibman
172 et al., 2004). He would later chair the iSchools leadership board from 2008–2010.
173 Another demonstration of the connection between these academic disciplines comes
174 from Weingart’s 2016 investigation of the disciplinary breakdown of submissions to
175 the 2017 annual ADHO-DH conference – the iField library and information science
176 ranked third in popularity out of 34 topics.

177 The iField programs cover a wide range of topics and already offer a variety of
178 degrees and supplemental credentials. “Degree programs at iSchools include course
179 offerings in areas such as information architecture, design, policy, and economics;
180 knowledge management, user experience design, and usability; preservation and
181 conservation; librarianship and library administration; the sociology of information;
182 and human-computer interaction and computer science” (iSchools Organization,
183 2020). We believe that digital humanities naturally fits into this topic list, and we
184 hope through our research to show some approaches for making DH a regular part of
185 iSchools education.

186 **3. Methods**

187 *3.1. Purpose and aims*

188 The purpose of this study is to provide an overview of possible implementations
189 of DH education as an interdisciplinary field in any university, especially within
190 iSchools or iField and related departments. Specifically, this study intends to describe
191 various models for DH education that lead to degrees and supplemental credentials
192 in order to inform university decision-making. In our conclusion, we make several
193 recommendations for how iSchools could better engage with DH. The DH programs
194 outlined here are based on our research of existing examples from worldwide univer-
195 sities, particularly within iSchools. Our work began under the auspices of the iSchools
196 Digital Humanities Curriculum Committee (iDHCC), established in February 2019
197 for a two-year review of what DH education could entail within an iSchool.

198 DH programs could range from the offering of a few individual courses to compre-

199 hensive degree programs, and everything in between (Sula et al., 2017). DH usually
200 also involves a research component that might engage students directly in innovative
201 work. Universities can offer DH degrees, supplemental credentials, and courses at
202 multiple tiers or levels – from undergraduate majors, to post-graduate certificates,
203 and masters and doctoral degrees. DH might be the focus of a primary degree, like
204 a bachelors or masters, or it may be the subject of a supplemental credential like
205 an undergraduate minor or graduate certificate. We are also interested in tracing
206 which administrative unit officially hosts a DH credential within the university –
207 whether that be within the iSchool, another department, or a centralized structure
208 at the university-wide level. Regardless of the primary or shared hosting of these
209 official programs, interdisciplinary undertakings always engage collaborators across
210 the university, so we also trace these. We organize and summarize an overview of
211 existing programs by collecting data about DH at universities and iSchools worldwide
212 and then make recommendations for iSchools based on these observations.

213 3.2. *Data collection*

214 To identify DH credentials at universities across the world, we approached data
215 collection from several directions. First, the iDHCC undertook an initial manual ad
216 hoc survey of websites from universities all over the world to locate existing DH
217 programs both within and beyond iSchools. Second, we used the CLARIN-DARIAH
218 online registry to gain a broad view of DH programs at European universities – again
219 both within and beyond iSchools. Third, the iDHCC also initiated a targeted survey
220 with an online questionnaire to gather perspectives on DH from iSchools themselves,
221 across the globe. Fourth, we conducted a comprehensive survey of websites from
222 North American iSchools to search for DH-related content. Here, we provide a
223 detailed overview of each of these datasets and a discussion of their limitations.

224 3.2.1. *Website surveys*

225 Universities publicize their DH programs through their websites – targeting perhaps
226 mainly their own current and prospective students, but also reaching many potential
227 audiences. These websites provided us with details of the structure of each DH pro-
228 gram, thus making them a rich source of data. However, manual time and effort were
229 required to interpret and collate data as each website presents relevant information
230 in a different way, sometimes with different terminology. The iDHCC conducted
231 initial data collection from websites in March 2019, investigating universities on
232 all populated continents. Committee members recorded DH programs within both
233 iSchools and other units in universities, including at institutions that lack iSchools.
234 Each committee member primarily cataloged programs and regions they were already
235 familiar with, so this was an ad hoc survey.

236 Although we prefer comprehensiveness in our study, several factors led to incom-
237 plete data collection. As an unfunded project, resources were limited. This manual
238 website survey was done voluntarily, with committee members adding information as

239 they had time in their already overwhelmed schedules. Additionally, many worldwide
240 university websites lack information in languages known to iDHCC members. Thus,
241 the goal for the manual ad hoc survey was not comprehensiveness, but rather just to
242 get a general sense of the range of types of DH education that already exist. Although
243 not ideal for our study here, we agree that getting a general sense of the available
244 options is important. With our limited resources, we attempted to fill in the gaps of
245 this initial ad hoc survey with the following data collection efforts.

246 3.2.2. *Online DH course registry*

247 We supplemented the initial website survey dataset by examining the educational
248 offerings listed in the CLARIN-DARIAH registry (<https://dhcr.clarin-dariah.eu/>).
249 CLARIN, which stands for “Common Language Resources and Technology Infra-
250 structure” and DARIAH, introduced above, are both European Research Infrastructure
251 Consortiums (ERIC). CLARIN teamed together with DARIAH to create a registry
252 that curates information about DH courses across Europe, with some coverage be-
253 yond. This source also has data challenges. Although it is the only comprehensive
254 online catalog we found, it mostly focuses on European educational offerings. Fur-
255 thermore, while this registry lists “DH courses,” the interpretation of this term is quite
256 broad – and may include individual classes or entire programs. Several programs
257 closely related to DH are also listed, such as computational linguistics, media, digital
258 culture, and artificial intelligence. We filtered the results based on an explicit mention
259 of “digital humanities,” “computational humanities,” “humanistic informatics,” and
260 closely related terms in course titles. Although this data source provides uneven detail
261 on the individual programs, its wide reach and ease-of-use made this an important
262 part of our analysis at a high level.

263 3.2.3. *Online questionnaire survey*

264 The iDHCC aimed to document DH activities at iSchools worldwide, in order
265 to a) help expose planned and existing DH education programs at iSchools and
266 b) encourage other iSchools to consider implementing DH programs. The committee
267 therefore developed a brief online questionnaire to collect self-reported details from
268 individual iSchools. The requested information included a DH program title, estab-
269 lishment year, the department or unit of the university responsible for the program, a
270 link to the program webpage, a contact person, the types of credentials or degrees of-
271 fered, specializations within DH, and collaborations with other parts of the university
272 (see Appendix 1). Two separate forms gathered information about existing programs
273 versus programs in the planning stages. The Sungkyunkwan University Data Lab
274 administered the survey, which was created in November 2019 and pilot tested by
275 several iDHCC members who entered information about their home iSchools.

276 The iDHCC emailed the survey to the heads of iSchools on January 9, 2020. Initial
277 response rates were somewhat lackluster, so between May and October of 2020, we
278 carefully targeted a new batch of individual emails at colleagues known to engage
279 with DH at each iSchool. These emails tended to be sent out by iDHCC members

280 who represented the target region. Also, based on the initial data collected, in June
281 2020 the committee decided to add the second form to allow iSchools to describe
282 DH programs still in the planning stages. The uneven response rate, the varied details
283 in each response, and the fact that multiple responses documented DH programs
284 at their university but not within their iSchool, all make this a problematic dataset.
285 Nonetheless, we have good targeted details for specific iSchool programs.

286 *3.2.4. North american iSchool website survey*

287 Noting the limitations of the other data collection efforts, particularly in terms
288 of their lack of comprehensiveness, and our own time constraints, we decided to
289 undertake one comprehensive survey of websites of iSchools in a single region.
290 We chose the North American region because of its deep history in the iSchools
291 Organization and our own familiarity with the region. We searched all university
292 websites in North America with iSchools to look for any DH-related topics. Of course,
293 our data collection here was limited to the information universities have decided to
294 publicly share. As we emphasize in our conclusion below, we hope others will build
295 on our work by gathering additional comprehensive datasets about other regions.

296 The end result of bringing together all these public website-based data collection
297 efforts – the initial manual ad hoc survey, the online registry and questionnaire, and
298 the North American survey – is our current study, which can only provide a picture
299 of worldwide DH education and degrees that is incomplete and rough but also, we
300 believe, useful and timely.

301 **4. Results**

302 *4.1. General digital humanities education and degrees*

303 First, we want to provide a general glimpse of what DH education and degrees
304 look like at universities within any department or division. Through the manual
305 website survey, the iDHCC cataloged 31 Asian and Australian DH programs at 15
306 universities, 44 North American DH programs at 39 universities, and 48 European
307 DH education offerings (see Appendix 2 for a detailed catalog). Direct comparisons
308 of these programs across continents are hindered by differences in terminology, local
309 preferences for what information to put on websites, and variance in the ad hoc
310 methods used by individual iDHCC members to select universities in each region.

311 Among the data collected from university websites of 9 countries in Asia and
312 Australia, we found 18 programs at the bachelors level, 11 at the masters level, and 2
313 at the doctoral level. Among our sample, only universities in Japan, Australia, and
314 Singapore indicated that they offer multiple DH programs at different degree levels.
315 At the bachelors level, 6 programs offer a full major, 9 a minor, and 3 a specialization,
316 certificate, or an honors degree. At the masters level, 5 programs offer a full Masters
317 of Arts (MA) or Masters of Science (MS), and the remaining 6 programs offer a

318 certificate or something similar, such as a minor or a diploma of arts. Two programs,
319 in Japan and in Australia, offer interdisciplinary doctorates in DH. Among all the
320 degree programs in Asia and Australia, 3 DH programs have iSchool participation,
321 but the rest of the programs are not part of an iSchool.

322 In our exploration of North America, we identified 3 programs in Mexico, 6 in
323 Canada, and 35 in the United States. In 4 cases, the university offers multiple programs
324 – usually one at the graduate and one at the undergraduate level. Two out of every
325 3 (29 of 44) programs grant credentials at the graduate level. The most common
326 degree is a certificate offered at the graduate level (20) – or the somewhat similar
327 specialization or concentration (2). The next most common option is the minor at
328 the undergraduate level (7), with similar programs also called an undergraduate
329 concentration, specialization, or certificate (5). We also found 7 masters degrees and
330 3 bachelors degrees in DH. Some of the DH programs listed here do have connections
331 to iSchools – either they are hosted by the iSchool, or iSchool courses and faculty
332 engage with a DH program hosted in another department.

333 The initial search of websites by the iDHCC identified 48 DH educational programs
334 in Europe, distributed across 17 countries: Austria, Belgium, Estonia, Finland, France,
335 Germany, Ireland, Israel, Italy, Latvia, the Netherlands, Russia, Slovenia, Spain,
336 Sweden, Switzerland, and the United Kingdom. The majority of these programs
337 engage students at the masters level. Of these, most are MA (23), a few are MS (4),
338 and some are Masters of Philosophy (MPhil) (2). Additionally, there are 4 masters
339 minors and 4 masters specializations or similar supplemental credentials. At the
340 undergraduate level, we found 7 programs, of which 5 provide a Bachelors of Arts
341 (BA), 1 a Bachelors of Science (BS), and there was 1 undergraduate minor program.
342 Finally, the European universities offer a handful of doctoral degrees (3), as well as 1
343 summer school in DH.

344 To update these initial findings, we leveraged data from the CLARIN-DARIAH
345 registry that we downloaded in September 2020. This registry helped us to update the
346 picture in Europe since it focuses mostly on this region, with only four countries out-
347 side of Europe in the dataset. Taking into account all educational offerings considered
348 to be DH by the people who originally input them into the registry, including even
349 those programs not explicitly labeled as digital humanities, we counted the following
350 number of each type of program: bachelors programs (83), masters programs (162),
351 doctoral programs (16), modules (25), individual courses (129), summer school (12),
352 and continuing education (2). Thus, besides individual courses and modules, the
353 majority of programs are masters degrees, followed by bachelors degrees, and finally
354 doctoral degrees.

355 The CLARIN-DARIAH registry also enabled us to look more closely at the disci-
356 plines represented by these different DH programs. Here again we filtered the data
357 based on the programs as described above (with DH or closely related areas explicitly
358 mentioned in the title). Each person who entered a program also had the option of
359 registering multiple discipline categories for it. We counted the following number of
360 each disciplinary label: theory and methodology of DH (148), arts and cultural studies

(126), linguistics and language studies (118), computer science (107), history (103), and literary and philological studies (99). The next most common set of disciplinary labels are library and information science (55), media and communication studies (51), social sciences (42), archaeology (39), philosophy (17), ethnology (16), and musicology (15). Less well-represented disciplinary labels include religious studies (10), gender studies (9), cognitive science (8), legal studies (8), and an “other” category (22).

The combination of this website survey and the use of the online catalog provides the opportunity to make several very general and high-level observations regarding the implementation of DH education across the globe. These frame our discussion of DH within iSchools in the following section. First, there are some striking differences among the different geographical areas we studied. Asia, Australia, and North America tend to focus more on supplemental credentials rather than terminal DH degrees. The reverse is true in Europe, where most programs offer a masters or a bachelors degree. Second is the emphasis on graduate-level education in North America and Europe, whereas undergraduate degrees and credentials are relatively better represented in Asia and Australia. We need to highlight again, however, that this was not a comprehensive survey as we did not review all DH programs in the world, though we feel we do have enough data to reflect on general underlying trends.

4.2. *Digital humanities related to iSchools*

Moving from this general overview of global DH programs and degrees situated in any part of a university, we next turn our attention to how DH education relates to iSchools. Our initial source of data on DH in iSchools comes from the above-mentioned online questionnaire sent out by the iDHCC to every iSchool. These results were then supplemented by our own detailed examination of all the iSchool websites in North America, undertaken during September and October of 2020.

4.2.1. *Online questionnaire survey*

Out of 117 total iSchools, representatives from 36 iSchools filled out one of the two forms in the online questionnaire prior to October 15, 2020 (see Appendix 1 for the questionnaires). One of the forms was targeted at existing DH engagement ($n = 32$) while the other requested information about planned DH programs ($n = 4$). The 4 iSchools in the planning stage for DH programs include 2 in China (Shanghai University and Wuhan University), 1 in South Korea (Sungkyunkwan University), and 1 in the United States (Kent State University). Several iSchools in Europe wrote by email to inform us that they neither currently have a DH program nor plan to start one in the foreseeable future ($n = 6$), or are too early in the planning stages to contribute to the survey ($n = 2$). Thus, the response rate among all iSchools was about 37.6%, with some sort of response from almost two-fifths (44 out of 117). We also postulate that some iSchools did not fill in the online questionnaire or correspond with us because they have no existing or planned DH. For an inventory of the 32 iSchools

Table 1

Inventory of the 32 iSchools that completed the iDHCC online questionnaire indicating current engagement in DH education in some form. Universities are organized according to iSchool regions and quantified relative to the total number of iSchool members in that region as of October 2020. For region definitions, see iSchools Organization (2020)

Asia Pacific Region (10 of 31; 32.1%)	Hansung University, Jilin University, Kyungpook National University, Nanjing University, National Taiwan Normal University, Peking University, Renmin University of China, University of Hong Kong, University of Tsukuba, Yonsei University.
European Region (9 of 33; 27.3%)	Bar-Ilan University, Linnaeus University, University of Amsterdam, University of Borås, University College London, University of Glasgow, Universitat Oberta de Catalunya, University of Regensburg, University of Sheffield.
North American Region (13 of 53; 24.5%)	Dominican University, Indiana University Bloomington, Kent State University, Pratt Institute, San Jose State University, University of California at Berkeley, University of California at Los Angeles, University of Colorado at Boulder, University of Maryland, University of North Carolina at Chapel Hill, University of Oklahoma, University of Washington, Wayne State University.

401 that reported some type of existing engagement with DH in the online questionnaire,
 402 please see Table 1 below. The ways each iSchool engaged with DH varied widely,
 403 including: having faculty doing DH research, offering DH courses, collaborating
 404 with DH programs in another part of the university, or offering an iSchool degree or
 405 supplemental credential in DH.

406 *4.2.1.1 Digital humanities credentials and programs*

407 Among the 32 iSchools that filled in the online questionnaire describing DH
 408 engagement, some reported the official degrees and credentials outlined in Table 2
 409 below. In total, 18 iSchools replied ‘yes’ to the question about whether their program
 410 or university issues a degree or credential in DH. Although the online form asked
 411 separate questions regarding the names of the program and of the degree, the fields
 412 were open text rather than multiple choice, therefore we received a wide range of
 413 values. Sometimes the name of a university or specific unit within the institution
 414 was input in the field for the “name of program.” Therefore, we combined the two
 415 questions – whether they had a DH program and whether they issued a degree in
 416 DH – in this analysis. Where possible, we tried to verify the information on a given
 417 website or to contact the person who entered the data.

418 *4.2.1.2 DH program start years*

419 The iSchool questionnaire participants were also asked to specify the year their
 420 DH program began. Figure 1 graphs the results of this question. The temporal pattern
 421 in the establishment of DH programs associated with iSchools follows the general
 422 trend of the development of the DH research field. Thus, the programs represented
 423 in our dataset began slowly in the 2000s and increased significantly in the 2010s.
 424 The earliest schools to introduce DH curricula were all in Europe – the University of

Table 2		
Digital Humanities credentials and other programs reported by the iSchools through the iDHCC online questionnaire about existing DH education (universities which offer more than one degree in DH are repeated)		
Level	DH credential or program	University (specific program)
Undergraduate	Bachelors of Arts	Yonsei University (Digital Humanities)
	Major	Universitat Oberta de Catalunya (Digital Humanities)
		University of Amsterdam (Cultural Information Studies)
	Specialization	Hansung University (with Library and Information Science)
	Minor	University of California at Los Angeles (Digital Humanities)
University of California Berkeley (Digital Humanities)		
Badge	University of North Carolina at Chapel Hill (Digital Advancement in Data Studies)	
Graduate-Masters	Masters	Renmin University of China (Digital Humanities)
		Nanjing University (Information Resources Management, Big Data Analytics)
	Masters of Arts	University of Regensburg (Digital Humanities)
		Bar-Ilan University (Digital Humanities)
		Linnaeus University (Digital Humanities)
		University of Glasgow (Digital Media and Information Studies)
	Masters of Arts and Masters of Sciences	University College London (Digital Humanities)
Certificate	Dominican University (with Information Management or Library and Information Science)	
	Indiana University Bloomington (with Library Science or Information Science, or in Digital Arts and Humanities)	
	University of California at Los Angeles (Digital Humanities)	
	University of Colorado at Boulder (Digital Humanities)	
	University of North Carolina at Chapel Hill (Digital Humanities)	
	University of Oklahoma (Digital Humanities)	
Pratt Institute (Digital Humanities)		
University of California Berkeley (Digital Humanities)		
Pathway of Study	Kent State University (Digital Humanities)	
Badge	University of North Carolina at Chapel Hill (Digital Advancement in Digital Pedagogy or Digital Project Management)	
Graduate-Doctoral	PhD Minor	Indiana University Bloomington (Digital Arts and Humanities)
Other	Summer Institute	University of Washington in partnership with the University of Victoria (Digital Humanities)
	Institute	University of Maryland (Maryland Institute for Technology in the Humanities)
	Individual DH Courses	Kent State University
		Wayne State University (DH course in the History Department)
		University of Tsukuba (DH course in the Masters in Informatics Program)
San Jose State University		
DH Integrated into	National Taiwan Normal University	

Table 2, continued		
Level	DH credential or program	University (specific program)
Other	Existing Courses	University of Hong Kong University of Sheffield University of Borås (in the specialization in Digital Library and Information Services; classes open to DH program at University of Gothenburg)
	Other	Jilin University (Digital Humanities and Knowledge Service) Kyungpook National University (Glocal Cultural Contents Creative Genius Training) Peking University (Program in Digital Contents and Information Studies)

425 Glasgow (2001), the University of Amsterdam (2003), and the University of Borås
426 (2008). Although these initiatives may not specifically reference “Digital Humanities”
427 in the program or credential title, they all integrate DH into many courses (cf. Table 2
428 above). The first iSchool program that explicitly used the term “Digital Humanities”
429 in its title was established in 2010 at University College London (UCL), followed
430 in 2011 by the University of California at Los Angeles and the University of North
431 Carolina at Chapel Hill, and in 2012 by the University of Washington. Most of the
432 DH programs reported in our dataset were developed after 2014, and, as mentioned
433 above, a handful are still in the planning stages so they are counted with 2020.

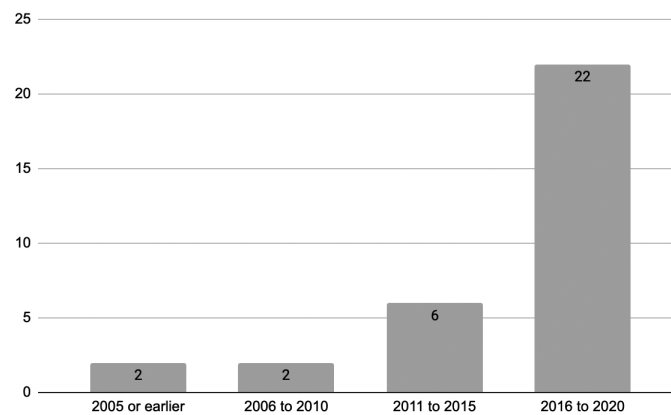


Fig. 1. Quantitative groupings of iSchool DH programs by year of program start, based on data reported in the iDHCC online questionnaire.

434 4.2.1.3 Collaborations beyond the iSchool

435 Several of the DH educational programs outlined by the iSchool representatives in
436 the online questionnaire are not hosted by the iSchool itself. The online form asked
437 each iSchool about their collaborative efforts with units in their university beyond

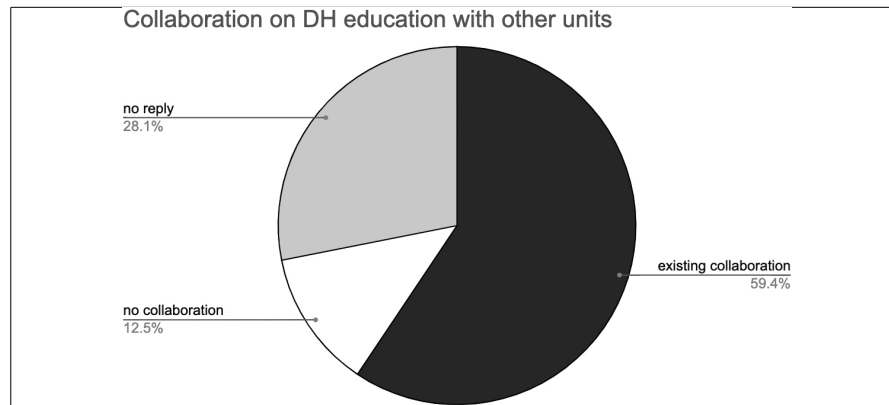


Fig. 2. Indication of collaboration reported by the iSchools through the iDHCC online questionnaire.

438 the iSchool. We can see from Fig. 2 that the majority of iSchools collaborate on
 439 DH education with other units (19 out of 32, or 59.4%). A much smaller portion
 440 specifically indicated that they do not actively collaborate on DH education (4 out of
 441 32, or 12.5%), though this is likely changing all the time. For example, Dominican
 442 wrote “not currently” in this field, implying the possibility of future partnerships. The
 443 remainder of the iSchools provided no reply (9 out of 32, or 28.1%) as this was not a
 444 required field.

445 In terms of the details for how these different intra-university divisions collaborate
 446 with each other, we observe a wide variety of relationships. On the one hand, the
 447 iSchool may provide or accept course credits towards a DH degree. On the other
 448 hand, there may be a centralized DH center, to which the iSchool contributes classes
 449 or other expertise. The centralized DH center may also involve the university library.
 450 In many cases DH degree programs are situated in a department or faculty external
 451 to the iSchool, so the iSchool may engage with those external programs. Finally, in
 452 several cases the DH credential is combined with another degree, such as a masters in
 453 history, which means that these degrees may be inside or outside of the iSchool.

454 4.2.1.4 iSchools with DH in the planning stage

455 Each of the 4 iSchools in advanced planning stages intends to create a program
 456 that explicitly mentions digital humanities in the title. Kent State University indicated
 457 that it will start a program without a terminal degree in 2021, whereas the rest will
 458 start programs in 2020 – with Sungkyunkwan and Wuhan planning to offer a degree,
 459 but not Shanghai. Rather than a standalone degree, Kent State intends to establish
 460 two choices for students to complement their masters programs – a pathway in digital
 461 humanities or a summer school in digital conservation. Sungkyunkwan aims to offer
 462 DH education at all three educational tiers, with a BA in digital humanities, an MA in
 463 digital humanities, and a PhD in digital humanities. Wuhan, however, plans to offer
 464 an MS in digital humanities.

465 Two of the 4 iSchools in advanced stages of planning intend to officially engage
466 with collaborators beyond their home iSchool. Sungkyunkwan is aiming for a broad
467 audience by laying the groundwork for possible cross-university registration and
468 virtual course sharing. They hope to support virtual and in-person student or faculty
469 exchanges, including with the Sungkyunkwan College of Arts and Sciences' DH Lab
470 and groups at other universities, like Kent State. The iSchool at Sungkyunkwan is
471 creating an iCollege that will serve as the center for all interdisciplinary teaching and
472 research on campus. All humanities majors will be encouraged to do a dual major in
473 DH, while social science students will be encouraged to take a dual major in social
474 informatics. At Kent State, the pathway in digital humanities will include several
475 courses from the applied data science minor, which is being planned separately and
476 will also be hosted by the iSchool.

477 4.2.2. North american website survey

478 As of October 2020, there were 51 iSchool members located in North America,
479 covering the United States and Canada. In the Fall of 2020, we undertook a detailed
480 manual survey of iSchool websites in order to find any information about DH (see
481 Appendix 3 for details not listed in the tables here). The main result indicates that a
482 relatively small percentage of iSchools directly offer their own DH credential, with
483 only 8 of the 51 directly offering a DH credential (see Table 3). Five of these had
484 also self-reported in the iDHCC survey – reflecting perhaps that those who chose
485 to answer that questionnaire were in fact the only programs currently engaging in
486 DH. Among the 8 with credentials, 6 iSchools offer their own supplemental graduate
487 credential, most often described as a certificate but also referred to as a specialization
488 or pathway. Additionally, the University of Oklahoma iSchool has a joint DH graduate
489 certificate with administrative units outside the iSchool and the Indiana University-
490 Purdue University Indianapolis iSchool offers a joint undergraduate minor with other
491 units outside the iSchool.

492 Among the 51 North American universities that host iSchools, 32 of them had
493 some sort of official DH program either in a central administrative unit like the library
494 or in another academic division, usually a humanities department (63%, or almost
495 two-thirds). About one-third of those DH programs engaged the iSchool in some
496 publicly apparent way (11), of which 2 of these also had an official DH program
497 within the iSchool (the University of Oklahoma and the University of Texas at Austin,
498 mentioned above). We found that at least 9 iSchools offer dual degrees with humanities
499 programs, and so these may have some affinity with DH (see Table 4). For example,
500 several iSchools offer a joint masters degree between history and iFields like library
501 or information sciences. It may be the case that some of these joint programs existed
502 prior to the rise in popularity of the term “digital humanities,” so that if they were
503 to be developed today they might promote themselves as DH. Interestingly, most of
504 these universities have another unit at the university that explicitly conducts research
505 in DH or offers degrees in DH.

Table 3
The North American iSchools that offer explicit DH credentials within the iSchool

University	iSchool	Credential	In iDHCC survey?	Notes
Dominican University	School of Information Studies	(Graduate) Certificate in DH	Yes	
Indiana University-Purdue University Indianapolis	School of Informatics and Computing	(Undergraduate) DH Minor		Joint program with Liberal Arts/Art and Design
Indiana University Bloomington	Department of Information and Library Science	(Graduate) Specialization in DH	Yes	
Kent State University	School of Information	(Graduate) Pathway in DH	Yes	
University of Missouri	School of Information Science and Learning Technologies	(Graduate) Certificate in DH		
University of Oklahoma	School of Library and Information Studies	(Graduate) Certificate in DH	Yes	Joint program with other departments The central library also hosts DH projects and events
Pratt Institute	School of Information	(Graduate) Advanced Certificate in DH	Yes	
University of Texas at Austin	School of Information	(Graduate) Certificate of Advanced Study in DH		An Undergraduate Certificate in DH is offered through the Department of English and includes iSchool courses

Table 4
iSchools that offer dual degree programs which are similar in character to DH, but not explicitly DH

University	iSchool	Joint degree	Collaborating Unit	DH Hosted Elsewhere in University
Carnegie Mellon University	Heinz College, School of Information Systems and Management	Masters of Arts Management (MAM)	College of Fine Arts	Library, and College of Humanities and Social Sciences
Louisiana State University	School of Library and Information Science	Masters of Library and Information Science and Masters of Arts-History	History Department	
University of Maryland	College of Information Studies	Dual Masters in History and Library & Information Science	Department of History	Maryland Institute for Technology in the Humanities
Simmons University	School of Library and Information Science	Library and Information Science: Archives Management (MS) + History (MA)	Department of History	
University of Texas at Austin	School of Information	Information Studies (MSIS) with an MA in English, Latin American Studies, Middle Eastern Studies, or Women's & Gender Studies	Various	Digital Studies in the Humanities at UT Austin
University of Toronto	Faculty of Information	Masters of Information & Masters of Museum Studies	Both offered by the iSchool	Faculty of Arts and Sciences
Wayne State University	School of Information Sciences	Masters of Library and Information Science and a Masters of Arts in Public History	Department of History	College of Liberal Arts and Sciences
University of Wisconsin, Madison	The Information School	Masters of Arts in Library and Information Studies and Masters of Arts in Art History or Music	Department of Art History or School of Music	Center for the History of Print and Digital Culture
University of Wisconsin, Milwaukee	School of Information Studies	Coordinated Degrees of Masters in Library and Information Science and a Masters in many other fields (such as Anthropology, History, etc.)	Various	Digital Humanities Lab at the Library

506 Much more challenging to ascertain with precision is how engaged individual
507 faculty members in each North American iSchool are in DH. We were able to gather
508 information that indicates that at least 23 iSchools have faculty members involved in
509 DH in some way – whether through research or by teaching individual DH courses.
510 There were at least 14 iSchools that listed courses that were specifically branded as
511 DH, many of these in the iSchools that explicitly offer a DH credential as listed above.

512 Thus overall, we see the same patterns as outlined in the prior section about
513 the iDHCC online questionnaire. DH is not usually offered in an iSchool, instead
514 being offered by another administrative unit at the university. Several iSchools offer
515 dual degree programs, which may have existed since before DH became popular.
516 In general, iSchools are more likely to have individual faculty who engage in some
517 way with DH rather than the iSchool implementing any official program. The other
518 observation is that among the few iSchools that offer a DH degree, none of them
519 are terminal degrees, rather they are all supplemental credentials, which was the
520 preference we outlined before for North American DH.

521 **5. Discussion**

522 These results indicate significant room for growth within iSchools for DH educa-
523 tion. Several models for how iSchools can implement DH degrees and supplemental
524 credentials can be found in examples already put into practice by both iSchools and
525 other academic units in universities around the world. Now is the time for iSchools to
526 take up this challenge and embrace a more active role in establishing DH education at
527 their universities. This type of interdisciplinary engagement may offer iSchools a new
528 way to have an impact and increase their exposure. In an earlier issue of this journal,
529 Marcella and Oppenheim (2020) present the challenges for the future sustainability of
530 library and information science programs in the UK, part of the iField often covered
531 by iSchools. Yet, they also note that: “The current information environment is full
532 of problems: information overload, fake news, media control, abuse of social media,
533 preservation challenges, etc. There is precedent in LIS for addressing some of these in
534 the past” (Marcella & Oppenheim, 2020: 434). If iField programs have the potential
535 to contribute to humanistic solutions for society but are also facing the requirement
536 to justify their existence, then we believe DH presents an ideal area of expansion for
537 iSchools and other iField departments (in agreement with Robinson et al., 2015).

538 This paper aims to propose potential roles for iSchools in establishing and partic-
539 ipating in programs that offer DH degrees and supplemental credentials. In this
540 section, we summarize what we have observed about DH education around the world.
541 Then we use this information to make recommendations for how iSchools can engage
542 with these degrees and credentials. We hope that this discussion will support iSchools
543 to take on a leadership role in establishing DH programs at their universities.

544 *5.1. DH education degrees and supplemental credentials*

545 We observe a variety of ways universities implement DH degrees and credentials

546 around the world. These differ based on the level of the degree and whether the
547 university offers multiple degree levels simultaneously, whether it is a terminal degree
548 or a supplemental credential, the type and name of the credential, the administrative
549 unit offering the degree or credential, and the role of the iSchool in each program.

550 The degree and credential options span from a full undergraduate bachelors degree
551 or an undergraduate supplement like a minor, to a full graduate masters degree or a
552 masters supplement like a certificate, to a doctoral degree. We found that only a small
553 number of universities offer degrees or credentials at multiple levels at the same time
554 – in these rare cases, usually both an undergraduate degree or supplemental credential
555 and a parallel masters degree or supplemental credential are offered simultaneously.
556 Almost no universities grant both a full degree and a supplemental credential at the
557 same level – for example, they will offer a full masters or a graduate certificate, but
558 not both. Very few universities offer a DH degree at the doctoral level. Finally, there
559 are various ad hoc implementations of DH education, including summer schools and
560 continuing education programs. These may provide brief opportunities for students to
561 begin to familiarize themselves with the field.

562 We find it interesting that DH is often conferred as a supplemental credential rather
563 than a terminal degree. This seems to imply that the subject has not yet fully developed
564 its own identity and ability to stand at a level equivalent to more traditional subjects.
565 Similarly, the scarcity of doctoral degree programs may indicate a lack of confidence
566 in the potential of pure DH research. Stand-alone digital humanities departments are
567 rare to nonexistent (we did not find any in our search). Given the relatively recent
568 formation of the iField itself and its position at an interdisciplinary boundary, iSchools
569 could potentially lend their knowledge about academic organizations and procedures
570 to help guide the further institutional development of the DH field. Perhaps DH can
571 follow the direction of the iField to develop administrative units at universities for DH
572 that are similar to iSchools, which bring together faculty members for shared efforts
573 in research and teaching.

574 We can also look more closely at the purpose of programs that do offer a full
575 masters degree. The intention of such a degree is for the student to build expertise and
576 specialization in DH based on a foundation of prior university education. Applicants
577 should hold a bachelors degree in any humanities field or related discipline such as
578 social sciences. Team-building is key to DH, therefore teams of students and, later,
579 professionals and researchers, who have both interdisciplinary backgrounds and DH
580 training are advantageous for tackling complex problems. However, given the diverse
581 backgrounds of masters students, these programs must first provide introductory
582 courses in DH and its methodologies, rather than building on such courses taken
583 by students at the undergraduate level. In this respect, a DH masters is similar to
584 a masters in an iField discipline like library and information science, which may
585 accept students with a bachelors degree in any area of specialization. These types
586 of programs then teach the theories and methodologies of library and information
587 science from the beginning without assuming prior knowledge.

588 As we have seen, there are interesting regional differences for what degrees or sup-

589 plemental credentials are made available. On the one hand, European universities offer
590 more terminal degrees in DH, especially masters and bachelors degrees. Universities
591 in the remainder of the world have arranged their DH education primarily around
592 supplemental credentials, like the undergraduate minor or the graduate certificate.
593 On the other hand, DH education tends to take place at the graduate level in Europe
594 and North America versus the undergraduate level in other places in the world. There
595 seems to be an expectation in these regions that students will first have either hu-
596 manities domain knowledge or technical skills from an undergraduate degree before
597 they begin studying DH. Future research could investigate the underlying cultural
598 and contextual aspects to the decision making that has led to these divergent trends.
599 Although we would recommend eventual standardization across the globe, at this
600 point local iSchool leaders should take into consideration these regional preferences
601 when building DH programs.

602 5.2. *Proposals for iSchools*

603 Based on the results of our data analysis, we can now make some preliminary
604 recommendations specifically for iSchools. At a high level, we strongly believe that
605 iSchools should engage more actively with the general conversations about DH hap-
606 pening in universities today. The iField holds both deep expertise in the implications
607 of technology for human society and has the technical skills to support analytical
608 DH research. At the same time, iSchools could benefit from this relationship to help
609 overcome the challenges they face in communicating to other parts of the university
610 about what they do. Making these connections could help to enhance partnerships with
611 humanities colleagues and attract new students into iSchool programs and courses.
612 Yet, few iSchools currently grant DH degrees or supplemental credentials – though
613 we see positive signs in the development of interconnections between iSchools and
614 humanities or other departments.

615 5.2.1. *Degrees and supplemental credentials*

616 As mentioned above, 4 iSchools reported in the online questionnaire that they are
617 planning to offer their own DH programs, thus highlighting the potential for iSchools
618 to implement the degrees and supplemental credentials we have documented here.
619 Partnerships with humanities departments can be useful, but iSchools should take on a
620 prominent leadership role in implementing DH either as part of these partnerships or
621 on their own. The specific degrees or credentials that an iSchool should establish will
622 depend to some extent on geography, as mentioned above. Given that many iSchools
623 only focus on graduate-level education, our primary recommendation is to offer a
624 graduate certificate or a full masters degree. If, however, an iSchool tends to work
625 at the undergraduate level, then a full bachelors or a minor in DH could be added to
626 the curriculum. We do not see much difference between a masters of science (MS),
627 a masters of arts (MA), or masters of philosophy (MPhil) – or between a bachelors
628 of science (BS) or a bachelors of arts (BA) – and we wonder how the differentiation

629 would be justified in each case. Perhaps an MS or BS would be preferred to highlight
630 the technical nature of the degree as the arts aspect of the degree would already be
631 captured by the “humanities” in DH. We cannot recommend that any university offer
632 a doctoral degree at this time as there may be complications for placing students who
633 earn such a degree, given the lack of DH departments. We also do not recommend
634 ad hoc educational models such as summer schools or continuing education as they
635 cannot offer the depth of experience needed to master the skills in this field. Further
636 recommendations could be guided by future research and evaluation of the relative
637 success of different degree programs.

638 5.2.2. *Partnerships*

639 At a high level, a university will benefit the most when a wide variety of strengths
640 are leveraged and combined from all sectors of the community. Since iSchools have
641 significant experience and knowledge to offer to DH programs, they can valuably
642 boost any DH effort. The iDHCC survey demonstrated that several iSchools already
643 have existing collaborations with external units. These programs interconnect in a
644 wide variety of ways – from cross-listing courses, to engaging in advanced research
645 together, and supporting shared degrees and credentials. Partnerships can be valuable,
646 but we should emphasize that iSchools should avoid serving in a subordinate capacity
647 within official interdisciplinary relationships. Collaborations should be seen as an
648 opportunity for iSchools to receive important university-wide recognition for their
649 work. In particular, one area where we see iSchools adding a missing component to
650 DH programs is in the support of a broad implementation of DH while simultaneously
651 underpinning research with deep technical knowledge. When a DH program is hosted
652 by a specific humanities department – such as English or linguistics – it often becomes
653 very focused on a specific set of questions and methods to the exclusion of other
654 important DH topics. An iSchool could act as a facilitator of collaboration across
655 many different subdisciplines and support technical work on a wide range of data
656 types. For example, one could foresee a role for an iSchool in bringing together
657 text-based researchers with those working on material culture – thus bridging the
658 divides between the different software, workflows, data types, and research questions
659 inherent to each area of study.

660 Among the North American universities with iSchools, the part of the university
661 most engaged with DH tends not to be the iSchool itself, but rather an administrative
662 unit in another area. At these universities, humanities departments or centralized
663 units like libraries, are usually the leaders in implementing DH education. Future
664 research could compare this structural trend to those in other geographical regions
665 of the world. Cases where DH has already been established, but iSchools are not
666 yet a central player, show two potential avenues for engagement between iSchools
667 and DH – first through the dual degrees we documented at some of these iSchools
668 and second through leveraging the traditional role iSchools play in training librarians
669 (Sula, 2013). Dual degree programs often take the form of a masters degree in a
670 domain such as history together with a masters degree in an iField such as information

671 science. The main downside to such dual degrees is, of course, the costs for the
672 students – both temporal and financial. Furthermore, these programs may lack true
673 integration of ideas. Despite these drawbacks, however, they may still serve as good
674 stepping-stones for the future development of more integrated degrees. The prospect
675 for iSchools to help train specialists to work as DH professionals in libraries is quite
676 appealing, especially since iSchool degrees often qualify students for job placement
677 in libraries.

678 As members of iSchools, we believe that iSchools have a lot to offer to DH
679 research and teaching, particularly given the traditional focus on human-computer
680 interactions. Therefore, we hope that iSchools will continue to actively seek out
681 potential partnerships with humanities departments and other units at their universities.

682 5.2.3. *An eye towards employability*

683 As iSchools consider implementing new degrees and credentials, they also need to
684 consider possible career paths for their graduates. There are several potential groups of
685 students who might be attracted to undertake DH education in iSchools. For example,
686 students with bachelors degrees in humanities may be interested in a masters degree
687 with a strong focus on information technologies, recognizing this knowledge as highly
688 desirable in the job market. Another potential audience may be GLAM (galleries,
689 libraries, archives, and museums) professionals looking to update their technology
690 and information skillsets. Elementary, middle, and high school teachers may also
691 want to learn more about digital methods and digital transformations of society to
692 help better prepare our children. Information technology professionals from many
693 backgrounds – database administrators, web developers, robotics programmers, etc.
694 – may be looking for a career change where they can bring their existing skills into
695 humanities fields. Any of these audiences would already feel welcome in joining an
696 iSchool program. Considering each of these potential DH student groups, there are
697 some interesting prospects for students after they complete their degree. For example,
698 a challenge facing the GLAM and cultural heritage sector is the lack of technology-
699 literate team members. Potential employees generally either know technology really
700 well but find it hard to understand the application context, or vice versa (Billore &
701 Golub, 2017). Therefore, carefully curating both skillsets through a DH degree in an
702 iSchool may raise the employability of people with humanities backgrounds and may
703 provide a pathway into the humanities for people with technology backgrounds.

704 One may also foresee several new roles undertaken in existing jobs or even the
705 creation of entirely new kinds of jobs. Obvious examples include the need for pro-
706 grammers, web developers, and project managers within DH centers or on DH
707 projects; librarians who provide data management guidance, metadata expertise,
708 or other digitization-related advice; school teachers who can integrate technolo-
709 gies into the classroom; and academics or researchers in the humanities or related
710 fields. Examples of potential jobs found on the Digital Humanities Now website
711 (<https://digitalhumanitiesnow.org/category/news/job/>) include DH project managers,
712 DH librarians, DH center coordinators/directors, technical developers, tenure-track

713 positions in DH, and DH post-docs. Hopefully, the unique blend of technology and
714 humanities skills that an iSchool could impart during a DH degree program would
715 make students competitive for such jobs.

716 5.2.4. Terminology

717 Perhaps the biggest challenge we found during our research was the wide range
718 of terminology and definitions used by the different programs. This can make it
719 difficult to equate specific degrees, tiers, or types of intra-university engagement
720 across different universities and continents. The field of DH is continuously evolving
721 these days, and we anticipate that it will not settle over the course of the next decade
722 either. However, we also anticipate that more and more humanities scholars will take
723 part in tasks that could be classified as DH. Digital methods are pervading every part
724 of our lives, including our academic work. For the benefit of students, we recommend
725 uniformity in the names of the degrees and credentials to follow mainstream trends,
726 particularly so that potential employers will easily understand the qualifications
727 of candidates. For example, many people outside academia may not know what a
728 “pathway” means as part of a credential, but they may be familiar with the more
729 common concept of a “graduate certificate.” Therefore, to avoid a fragmented field,
730 the most common terms should be used for naming DH degrees and credentials.
731 For a supplemental credential at the graduate level, the term “graduate certificate”
732 should be used instead of any of these terms: concentration, specialization, pathway,
733 track, minor, diploma, and badge. At the undergraduate level, the very common term
734 “minor” should be used for a supplemental credential in DH, and the following terms
735 should be avoided: certificate, concentration, specialization, honors degree, badge.
736 Although there may be an argument for some regional differentiation in these terms,
737 in most cases these are standard across the world.

738 6. Conclusion

739 Similar to Senchyne (2016), we see DH as an opportunity for iField education to
740 broaden its scope and more closely integrate with domain-specific knowledge fields.
741 The combination of a wide range of humanities subjects with the focus of the iField
742 on the relationships between humans and technologies makes iSchools an excellent
743 home for Digital Humanities teaching. In summary, DH provides opportunities for
744 iSchools to: 1) collaborate with other units on campus (e.g., humanities departments
745 and DH centers); 2) collaborate across the iSchools Organization and plug in to
746 the international dimension typical of DH scholarship; 3) lead DH efforts at their
747 universities; 4) expose humanities students to iSchool research, teaching, and career
748 opportunities; 5) develop courses focused on cultural and humanities data that may
749 serve data science programs; 6) demonstrate the breadth and scope of iSchool research
750 and teaching through DH (points taken from the iDHCC presentation of Walsh et al.,
751 2019).

752 Through our study, we have documented many examples that can inform decision
753 making by iSchools that are looking to develop their own programs in DH, or at
754 least partner with other units in the university to offer DH. Programs in the iField
755 like iSchools have always upheld a tradition of interdisciplinary activities across
756 their research and teaching. We highly recommend that iSchools proactively aim to
757 host DH degrees and supplemental credentials, while at the same time collaborating
758 with other units at their universities. An iSchool that wishes to take the first steps
759 in this process could begin with a supplemental degree at a single tier – either an
760 undergraduate minor or a graduate certificate – before moving on to a full, terminal
761 degree program. We also hope that other researchers will expand on our work by
762 undertaking comprehensive surveys of DH programs at iSchools in other parts of the
763 world.

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775 **Supplementary data**

776 The supplementary files are available to download from [http://dx.doi.org/10.3233/](http://dx.doi.org/10.3233/EFI-200452)
777 [EFI-200452](http://dx.doi.org/10.3233/EFI-200452).

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