The iSchools Landscape:
Diversity, Inclusiveness and Global Identity

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Abstract

The iSchools represent an international community of over 130 university faculties. They have a shared interest in research and teaching about information. The findings reported here provide insight into the perspectives and visions of the deans and directors of 75 iSchools. Findings show that (1) attention to people, information, and technology represents shared values; and, (2) the global identity of the community blends diversity and inclusiveness. The diversity and inclusiveness of the iSchools requires balancing academic traditions with innovations. The current leaders use this balance to the community's identity as well as Information Science scholarship as a discipline.

Keywords

iSchools, information science, diversity, global identity, research focus, collaboration, social contribution

1. INTRODUCTION AND BACKGROUND

The iSchools represent an international community of over 130 university faculties and departments. These members[1] include a broad range of disciplines with their own approaches to understanding and processing information that belong to the domain of 'Information Science'. Many of the iSchools emerged from library and information science programs. Larsen, the former Chair of the iSchools, provides a brief history of the iSchools (https://d-scholarship.pitt.edu/5852/1/The_iSchools_final.pdf). Many iShcools now include a range of disciplines such as computer science, communications and other social sciences, business, and the humanities.

Until 2008 the iSchools included primarily North American universities, many of which had a

[1] In this paper, we refer to iSchools members as dues-paying iSchools. They can be units on their own (e.g., dean led) or schools in a larger unit (e.g., director led) or a departmental unit (e.g., department chair led).

background as library schools (Larsen, 2018). However, the composition of the iSchools membership began to change from 2009 when two European schools – Humboldt-Universität zu Berlin and University of Copenhagen – and one Asian School – Wuhan University in China – became new members. The University of Sheffield joined in the following year, and the membership began to grow rapidly once the bylaws were changed in 2015 by eliminating the $5000 annual dues requirement, and instead allowing members to choose their preferred levels with more affordable annual membership fees. This resulted in the globalization of the iSchools community.

The first iConference took place in 2005 at Penn State University in the US and became an annual event after 2008. The first non-US iConference took place in Berlin, Germany in 2014. The iConferences aim to push "the boundaries of information studies", to explore "core concepts and ideas", and to create "new technological and conceptual configurations"[2]. It also rotates among the three regions as required in the Bylaws. The COVID pandemic of 2020 forced the organization to move from physical to virtual conferences within two weeks. Since then, the iConference has both virtual and physical options. The financial benefit of virtual conferences has also meant that doctoral students and early career faculty no longer need to struggle to find travel money to attend. The environmental benefit of fewer flights is significant as well.

Having doctoral programs and serving doctoral students has long been a hallmark of iSchool membership. The number of doctoral programs varied over time, but at the time of writing this paper, all 111 members above the "basic" level offer doctoral programs. At the time of data collection, 19 associate member iSchools did not support a doctoral program. The European/African Region and the Asia-Pacific Region now offer doctoral colloquia free of charge, and attendance goes beyond regional boundaries. The European/African Region has a Doctoral Seminar Series where PhD students can present their research and receive feedback from senior scholars and peers. The Asia-Pacific Region organizes the annual AP-iConference for information science researchers. It is held in conjunction with the annual International Conference on Asia-Pacific Digital Libraries (ICADL). Student colloquium is an important track for AP-iConference for PhD and master students which gives them an

[2] More details about the history and proceedings of iConference can be found in this webpage: https://www.ischools.org/past-conferences

opportunity to exchange ideas and get feedback from mentors. Support for early career researchers began in the Asia-Pacific region by setting up a "Next Generation Committee" with regular meetings. Such support for early career researchers has spread to Europe.

Since its official incorporation in 2014, the iSchools organization has become a more diverse body with increasing number of non-North American members. At the time of writing, 55 members come from the North American region, 38 from the European and African region, and 37 from the Asia-Pacific region. These iSchools are themselves diverse within their own universities with their own complex funding and governance structures, approaches to faculty recruitment, courses taught, student requirements, and job markets.

A key challenge for the iSchools is to accommodate the broad range of disciplinary needs and expectations that span computer science, library science, information science, communications and other social sciences such as psychology, law, economics and business. The advantage of bringing together these diverse viewpoints is significant (e.g., as Scott Page demonstrates in his book (Page, 2007)), but such advantages accrue over time and work best with frequent personal intersections, which can be difficult in a global organization with different languages and different socio-economic practices and cultures.

Back in 2012 Wiggins and Sayer (p.3) noted that the "formation of a community identity" is a challenge, and the issue remains with any international organization. The same view has been expressed by others. For example: "The mix of legacies and contemporary challenges creates a figure-ground problem in which I-School identity emerges and fades" (King 2006, p.13); "The diversity of iSchools makes it difficult to recommend a common curriculum" (Walsh et al., 2021, p.200); and "The letter 'i' in iSchools could refer to information or to interdisciplinarity, demonstrating the importance of both concepts in the job market as well as the overall recent trends within the field" (Wei et al., 2023, p.1).

1.1 Research questions

The questions mentioned above have been discussed and debated in several research papers and were discussed at annual board meetings. In 2020 a global team started a project called "Shaping the iSchools' Identity and Interactions in a Globalized World" (i4G). The goal was to document the diversity, identity and legacy of the iSchools as a global community.

Thompson et al (2021) report on the overall aims and some of the key findings of the i4G project. This paper reports specifically on a set of findings from the following three sets of research questions that were formulated to gather data from the iSchools' leadership – deans, directors and heads – on the nature and diversity of the iSchools:

RQ Set 1. Value:

- What are the key features of the iSchools community?
- What is the core consensus of the iSchools community?
- What actions should the iSchools community take to achieve the consensus?

RQ Set 2. Positioning:

- How are the member iSchools placed within the universities with regard to research, teaching, and engagement?
- How are the member iSchools placed within the society with regard to cooperation and employment?

RQ Set 3. Legacy:

- What is the research focus of the iSchools community?
- What are the contributions of the iSchools research to society?

2. METHODOLOGY

The project team was led by a principal investigator, and included regional teams from the North American, European-African, and Asia-Pacific regions. These teams were responsible for the data collection and analysis in their own region. The research teams took a Grounded theory approach (Nunes et al, 2010) to gather data from the leadership of the iSchools community through semi-structured interviews. The project team met online monthly to coordinate the research and to discuss issues. This is important in Grounded Theory because "making locally-informed and locally-significant contributions to theory are embedded in the very propositions of Grounded Theory as a methodology committed to understanding emic perspectives" (Nunes et al, p.74). Ultimately, a coordinating team including the principal investigator, the executive director of the iSchools who was the project consultant, and multi-lingual members of the Asia-Pacific team integrated the results.

One of the key challenges associated with this project was to find appropriate methods to gather and analyze data to answer the research questions. The project team recognized the

need to deal with a broad range of policies, methods, and protocols for gathering data from academic institutions across many countries, with different languages, cultures, and practices. The project team developed common questions to address the variations in context, culture, and sentiments. The team also developed a method for data coding and analysis, and a framework for comparing and contrasting the findings.

2.1 Data collection

The regional project teams used semi-structured interviews to collect the research data. iSchools heads were selected as interview candidates for two reasons: (1) they had up-to-date information about their institutions, and (2) they could provide a top-level view of information science as a discipline. The script for the semi-structured interviews included some open-ended questions, and was designed to include three sections on values, positioning, and legacy. Questions in each section were modified somewhat after four pretest interviews.

A factor in the research design was the selection of the interview languages. Although English is used by nearly all the iSchools for international communications, language can become a barrier to in-depth and meaningful discussions. Thus, some interview questions were adjusted according to local languages and contexts. Translations were also allowed if the interviewees preferred to use their regional languages. For example, the Asia-Pacific group used English and Japanese when interviewing one of the iSchools heads in Japan, and Chinese for those in China. The European-African group used English and German.

All interviews were carried out online between April 2020 – September 2021 and lasted for one to two hours. The interview language preference was clarified in advance. The regional groups interviewed the iSchools leaders from their region. Because of the COVID-19 pandemic, all interviews were carried out virtually on Zoom and were recorded and transcribed afterwards. All the deans and directors of the iSchools were invited to participate in the interviews, and 75 iSchools leaders from 22 different countries agreed to participate. This covered 61.48% of all iSchools members in 2022; 35 of them are from two North American countries (USA and Canada), 17 from 13 European countries, and 23 from 7 Asian-Pacific countries. The distribution of regions of the interviewed leaders roughly follows the distribution of the number of iSchools members for each region at that time (Table 1).

TABLE 1 Distribution of interviewed iSchools leaders.

	North America		Europe-Africa		Asia-Pacific		Total	
	No.	%	No.	%	No.	%	No.	%
Interviewed	35	65%	17	50%	23	68%	75	61%
Non-response	19	35%	17	50%	11	32%	47	39%
Total Member	54	100%	34	100%	34	100%	122	100%

2.2 Data analysis

All interview recordings were transcribed verbatim including pauses and interruptions. All contents were translated into English before further analysis. The transcripts were numbered according to the regions and the interview sequence. Each interview was given a three-digit code, the first number representing the region, e.g., 1 for the European-African region, 2 for the Asia-Pacific region, and 3 for the North American region; and the two subsequent numbers represent the serial number of the interview in the specific region. The software MaxQDA was used to facilitate qualitative data analysis. Following Strauss and Corbin (Strauss & Corbin, 1994), a coding scheme was first developed by the project team. Three analytical techniques were further applied to the qualitative data, namely, coding, memoing, and constant comparison. Three types of coding were included in this study: open coding, axial coding, and selective coding (Williams & Moser, 2019). Theoretical memoranda, "written theoretical questions, coding summaries, and hypotheses" (Douglas, 2003, p. 48), were used during the whole coding process to monitor and stimulate coding so that the data analysis process was consistent and coordinated among different regions. The constant comparison method was used to distinguish different types of codes and to synthesize key categories and conceptual properties (Douglas, 2003). In this study, three main categories of codes were synthesized, which are value, positioning, and legacy. The second and third layers of sub-categories were further identified during the step of constant comparison. Appendix 1 shows an example of the coding.

To analyze the connections between categories, a thematic co-occurrence analysis was conducted following the steps proposed by Scharp (2021). It can not only cluster large qualitative data sets into key themes (Guest & McLellan, 2003), but it can also identify interrelationships either within or between the emergent themes (Saldaña, 2021). This co-

occurrence analysis considers three key standards: recurrence, repetition, and forcefulness (Scharp, 2021). Recurrence refers to the quantity of codes. Repetition pertains to the usage of similar words and/or phrases. Forcefulness refers to the extent of quality, such as the details and empathic communication. This study used this method to identify connections within and between the value, positioning, and legacy of iSchools. A co-occurrence matrix was developed using the function provided by MaxQDA to record the co-occurrence of two categories of codes within interview transcripts. The process was repeated for all categories and subcategories of codes. Table 2 shows an example of the co-occurrence matrix of identified research focuses in the three regions. Patterns were further analyzed by examining the co-occurrence matrix for making visualization figures.

TABLE 2 The co-occurrence matrix of codes for research focuses and regions.

Research focus	North American region	European-African region	Asia-Pacific region
Information Management	10	20	35
Library Science	3	6	23
Digital Humanities	3	7	15
Data Science	5	5	12
Informatics+ Scenarios	7	5	14
Archival Studies	3	1	17
Information Technology	8	6	8
Media Studies	2	5	2
Bibliometrics	0	2	6
Knowledge Management	0	3	4

3. FINDINGS

Several themes emerged during the analysis of the qualitative data. Findings from the interview data about the core value, positioning, and legacy are presented in the following subsections with the appropriate subheadings, tables, and figures. Section 3.1 discusses different aspects of the core value of iSchools, and Section 3.2 discusses aspects of positioning. Legacy issues are intertwined with the discussions in sections 3.1 and 3.2; and these are also discussed in Sections 3.3 and 4 focusing specifically on the challenges as well as the core contributions of the iSchools.

3.1 Key features of the discipline of information science

The interviews show a consensus that the theme of "information, people and technology" remains as a core value of the iSchools. This classic description of iSchools defines what we are and brings us together (Interview No.324). It is the first thing that each member of the iSchools community should "share, celebrate, and promote" (Interview No.321). Even in the foreseeable future, this three-part description can still serve as a useful umbrella value to define all the research and studies of the iSchools community (Interviews No.324 and No.327).

3.1.1 The core issue is information

Information has been treated as the key concept and the orientation of the iSchools community (Interviews No.102, No.103, and No.205). Some of the interviewees see: information and knowledge organization as the key foundation of the whole field (Interviews No.101 and No.102); "iSchool is an academic department or an academic program that deals with information at all level(s)" (Interview No.105); "Information is the center concept" (Interview No.202)' and the information science discipline cultivates professionals who know how to deal with information in all contexts (Interviews No.105 and No.201).

3.1.2 Technology is a tool

Compared to the central role of information, technology is more often treated as a tool. Researchers of the iSchools community explore/investigate the advantage of using tools, algorithms, and technologies to solve real problems in society (Interview No.118). The "entrepreneurial thinking" of our discipline regarding technology distinguishes us from other social sciences (Interview No.202). What we could do with technology impressed scholars from other disciplines and helped iSchools members to be positioned in a better role in parental institutions. More details of the cooperation of iSchools with other disciplines are discussed in Section 4.1, together with the regional differences. Section 4.3 indicates the use of technology as a tool in many iSchools research areas, e.g. data science, digital humanities, crowdsourcing, etc.

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3.1.3 Society and humanity are the target

The key difference of the discipline compared to, for example, computer science, is that the

iSchools look into research questions from human perspectives (Interviews No.101 and No.303), such as user behavior and needs. The value of the discipline lies neither in teaching and designing technology nor in programming (Interview No.303). Instead, the community addresses the human side of information and technology (Interview No.304). It develops sub-areas such as human-information interaction, human-centered informatics, human-centered data science, human-centered computing, etc. (Interviews No.101, No.204, No.304, No.307).

Because of the human side of this discipline, iSchools leaders consider the social attribute as a key feature. To start with, the root of this discipline grew from library and information science (https://d-scholarship.pitt.edu/5852/1/The_iSchools_final.pdf) and is closely related to the public good. Even though many iSchools no longer have the word "library" in their names, it remains a flagship degree among many iSchools members (Interview No.333). At the same time, many iSchools and libraries are run by the government (Interview No.112), and libraries are treated as a new kind of knowledge infrastructure in the modern age (Interview No.113). Thus, the whole iSchools community was born with a 'societal attribute', which means it easily gets involved in society (Interview No.113) and can provide service to society (Interview No.333).

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The humanistic nature of the iSchools research is one of the core values and advantages of information science (Interview No.329), as well as its key differences from others (Interviews No.109 and No.212). Other disciplines such as computer science have been good at "producing tools, algorithms, and technologies to disseminate and share information. But they haven't paid enough attention to what happens when information is out there with society" (Interview No.110).

The humanistic orientation of the iSchools community helps it to influence and nurture society (Interviews No.322 and No.323) and to promote social justice (Interview No.111). Many works are not so much for commercial benefits, but with the notion of public good (Interview No.111). The iSchools care about how all kinds of technologies such as artificial intelligence and data science can really benefit the entire human society (Interview No.332). The iSchools get positively involved in world problems (Interviews No.321, No.322, and No.326), such as misinformation, disinformation, information overload, data and artificial intelligence, and ethics. Many studies try to develop effective mechanisms to equip the general public with enough soft skills and critical thinking to better deal with data, information, and knowledge

(Interviews No.110, No.212, and No.333).

3.2 Key diversities

3.2.1 Geographical differences as challenges

The interests, concerns, and contexts of the three regions are quite different (Interview No.306). This study shows geographical differences among the iSchools in research (Section 4.3), institutional collaboration (Section 4.1), and job market (Section 4.2). Though there are intersections in research of certain aspects between regions, the focus of the research is closely related to the local social and economic context (Interview No.220). As a result, it is easier to cooperate with scholars and members from the same region (Interviews No.120, No.207, and No.210). Language and culture are the main challenges brought by the geographical differences. The academic culture is significantly different (Interview No.107) if one thinks of "moving transatlantically to a new continent, a new country, a new city, and a new university" (Interview No.311).

3.2.2 Location, regional and institutional characteristics

3.2.2.1 Size of the iSchools

Within their universities, the iSchools cluster at two extremes: large and small. Many iSchools were the biggest within social sciences disciplines, or even within the university (Interviews No.110, No.111, No.201, and No.307). Others were sometimes the smallest school on campus (Interviews No.123, No.208, No.306, No.314, and No.329). Some said they were large are constantly growing (Interview No.305) and even are "the engine for the university" (Interview No.304), while some small iSchools feel they are shrinking and have diminished over the past few years (Interview No.323).

3.2.2.2 Prestige of the iSchools

The prestige of the iSchools within the university is not a matter of size. Many small iSchools have strong reputations and influence (Interviews No.208, No.306, No.317, No.320 and No.329). The majority of iSchools leaders said their schools are influential and well-recognized for their importance within the university. There are four key reasons for the prestige of iSchools. The first is that most iSchools have a strong research orientation (Interviews No.111,

No.201, and No.214) and the research focus of iSchools follows the international trend of the big data era (Interviews No.101, No.208, No.305). Second, many iSchools show their importance by supporting the service units of the university (Interviews No.121, No.214, No.309, and No.311), including the libraries, archives, and information systems. Third, iSchools' uniqueness and distinction mark their importance (Interviews No.208, No.214 and No.325). Fourth, some iSchools even play a transformative role within the university (Interview No.313). However, some iSchools are also weak and invisible within the university, either because of their size, as part of a larger department, and lack of recognition (Interviews No.102, No.321, No.326, and No.333).

3.2.3 Communities, multi-disciplinarity: benefits and challenges

The iSchools community has researchers and students with different disciplinary backgrounds such as library science, media studies, computer science, mathematics, pharmacy (Interviews No.104, No.122, No.203, and No.204). It is quite common for the iSchools community to form multidisciplinary research teams with scholars from different departments of the university (Interviews No.204, No.211, and No.328). As a result, the iSchools community includes a broad variety of research topics and methods (Interviews No.104, No.115, and No.327).

While the diversity of the iSchools community makes it possible to bring scholars and students from multiple disciplinary backgrounds under one big tent, the negative effect is the loss of common identity (Interviews No.204, No.206, No.328). Even some iSchools leaders are worried that the amount of diversity could make the field of information unrecognizable and non-existent (Interviews No.121, No.206, No.212, and No.213). The ambiguity of common identity leads to a divergence of orientations, especially when balancing traditions and chasing constantly changing trends (Interview No.314).

Some iSchools members resist the trend of removing the phrase library science, and believe that this remains the root of the field (Interviews No.107, No.113, No.202, and No.213); and many schools still believe that library science is their best and strongest research area (Interviews No.202 and No.208). Some say that it would be a shame if iSchools no longer responded to the needs of information organizations such as libraries and archives (Interview No.314). But some iSchools are eager to move away from library science into more computer- and data-oriented studies (Interviews No.205 and No.306). They choose to step outside the

traditional field by focusing more on technical research (Interview No.206) because research-oriented schools need to focus on expanding and embracing new areas (Interview No.102). Some iSchools argue that library science is resurgent, others fear that information science could be crowded out by data science (Interview No.317).

3.3 How to achieve a community consensus: thoughts and actions

3.3.1 Striking a balance

iSchools connect people and information with technology (Interviews No.111 and No.113). Some iSchools leaders describe this as "humanizing IT" (Interview No.104), in order to develop programs and technologies more suitable for the public. They emphasize and reflect the humanistic attributes of this discipline, such as equality and public good (Interviews No.107 and No.111), which are recognized as key differences between information science and computer science (Interview No.329). Many iSchools leaders believe it is essential to cultivate expertise that can harness the power of data, information and technology (Interviews No.101, No.102, and No.208).

It is also important to encourage traditional librarianship and technology to communicate with each other (Interview No.102). Traditional areas need to apply new data structures and techniques, while innovative areas focus more on advancing technology and algorithms (Interviews No.102, No.202, and No.331). Such a tension between the two sides does exist (Interview No.331). There are, however, overlaps and spaces for cooperation (Interviews No.102 and No.329).

3.3.2 Inclusiveness

Inclusiveness is essential for strengthening the field (Interviews No.206 and No.320). This echoes the diversity of the iSchools community (Interviews No.120, No.305, and No.306). Some iSchools leaders think inclusiveness indicates the interdisciplinary nature of the information science field (Interview No.315). It also supports the iSchools community influence and its vitality (Interview No.316). Inclusiveness means that the iSchools community can grow globally (Interview No.319), overcoming geographical differences and creating a sharing and cooperating atmosphere (Interviews No.107, No.122, No.206, and No.319).

Actions for inclusiveness are mainly related to collaborations and knowledge exchange within the iSchools community. Most iSchools are willing to share research results and experiences with other members (Interviews No.119 and No.203). They support the development of the community by organizing and attending iSchools activities (Interviews No.103, No.105, No.205, and No.208), collaborating in teaching (Interviews No.103 and No.121), and recruiting students and staff from other disciplines (Interview No.101). The doctoral students and early career researchers employ a wide range of methodologies, ranging from computer science (Interview No.101) to digital humanities (Interview No.105, No.112, and No.207) making the iSchools an intellectual home for those whose research extends beyond the boundaries of traditional disciplines.

3.3.3 Recognition

Based on the analysis of the interview, recognition includes two related aspects: discipline-based recognition and social recognition. Discipline-based recognition means that scholars outside of information science should know the field and its strengths (Interview No.328). It is important to define the discipline clearly (Interview No.320), especially since other disciplines are working on related topics, and since the iSchools community is expanding (Interviews No.328 and No.331). Because both the internal "intention" and the broader "extension" of information science is unclear, the social recognition of our discipline remains vague (Interviews No.105, No.202, No.321, No.329, and No.334), or blank (Interview No.208). Many iSchools leaders call for uniting all the strengths of the iSchools community (Interviews No. 202 and No.206) to improve the social recognition of the discipline and its contributions (Interview No.210).

To increase the discipline's recognition, many iSchools offer courses for the whole university to let students from other disciplines know more about information science (Interviews No.101, No.106 and No.204). Scholars also go to external meetings to publicize the discipline (Interviews No.202 and No.205). To increase social recognition, some iSchools change their curricula to adapt their students to the job market so that the discipline gains more recognition (Interview No.205). Many iSchools have built good relationships with industry (which is discussed in more detail in Section 4.2) and arrange students' internship projects that market the discipline (Interviews No.302 and No.320).

4. KEY CONTRIBUTIONS OF ISCHOOLS

4.1 Multidisciplinary nature of the discipline

Many iSchools leaders emphasized that their schools serve as a bridge between other faculties and departments (Interviews No.109, No.211, No.327, No.335). An analysis was conducted to find out the internal connections of the iSchools with other departments/schools. Results are shown in Figure 1. The size and color of the dots show the frequency and categories of codes. The lines and the thickness show the co-occurrences of codes and their frequency. It may be seen that iSchools collaborate within the university with a large variety of disciplines. Fields with iSchools connections are mainly computer science and information science, social science, humanities and arts. Computer science was the top department/school that iSchools cooperated with, followed by education, medicine, and communication. This coincides with past research such as "the iSchools can be considered multidisciplinary environments as they are home to academics from multiple disciplinary backgrounds" (Wiggins and Sawyer, 2012, p9) and "The iSchools are tackling important data problems of our generation—from healthcare to education, and from democracy to climate change. More importantly, they are doing so by making advances and innovations in not only the technology, but also in our understanding of human nature and the integration of that technology into human values" (Shah et al., 2021, p.796).

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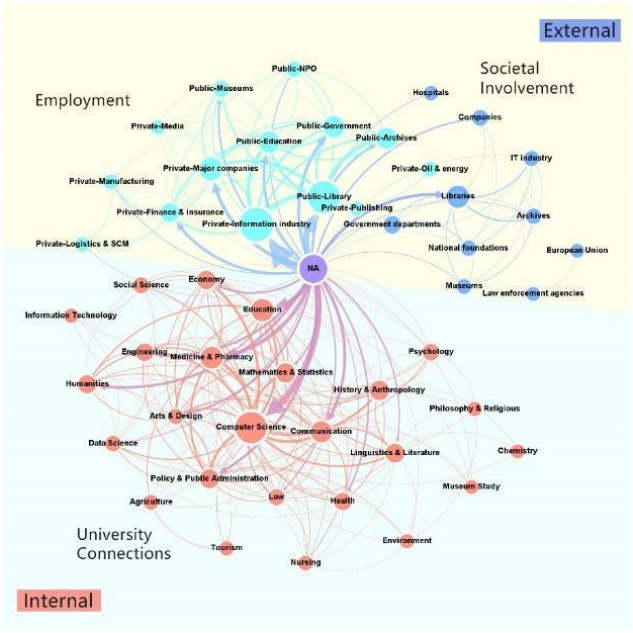
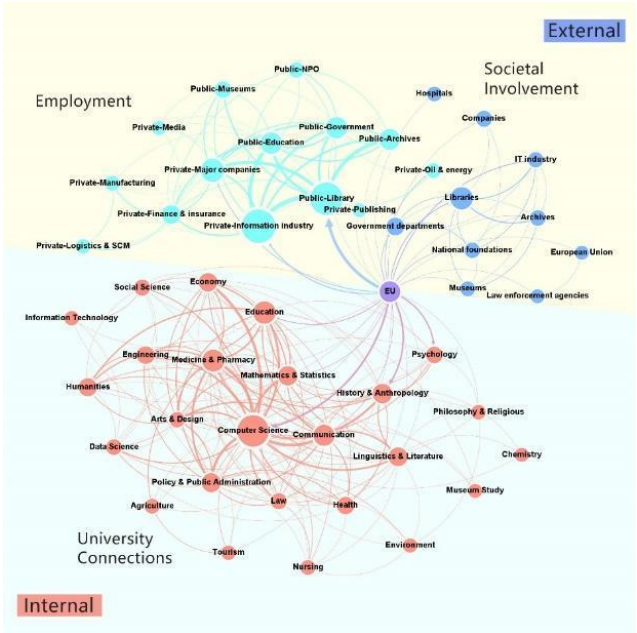
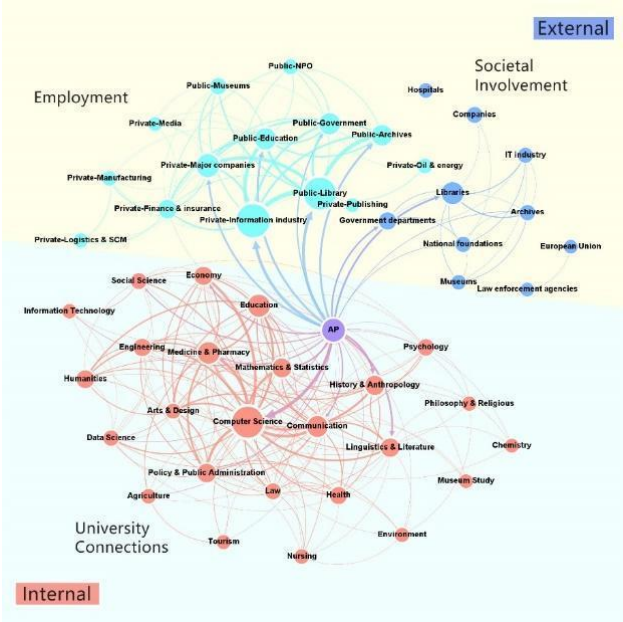
Figures 1(a), 1(b), and 1(c) show that, compared to the Asia-Pacific and European-African iSchools, the North American iSchools cooperate more with education, medicine & pharmacy, arts and design, and engineering. Asia-Pacific iSchools cooperate more with history and anthropology, linguistics and literature, and mathematics and statistics (Figure 1(c)). European-African iSchools cooperate more with history and anthropology, psychology, and education (Figure 1(b)).



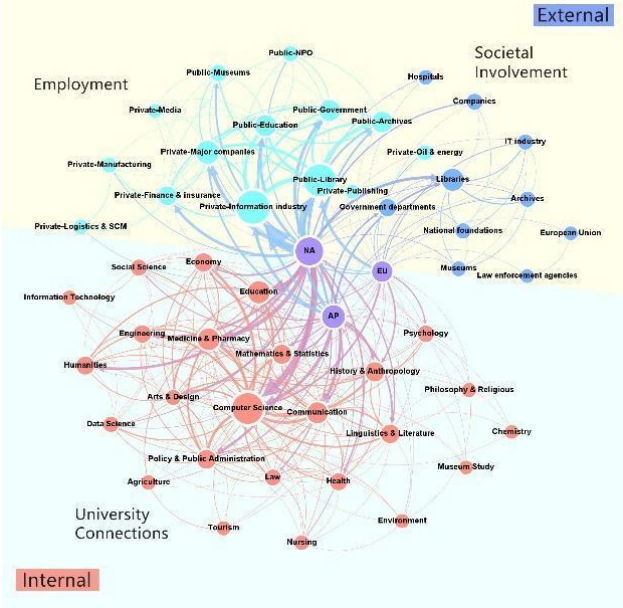
(a) North American region



(b) European-African region



(c) Asia-Pacific region



(d) Global distribution

FIGURE 1 Internal and external connections of iSchools.

4.2 Wider job market

According to the results in Figure 1(d), libraries and the information industry are the two main employers for graduates. Some students, especially graduate students, prefer libraries, archives, and museums; but over the years, the iSchools have also benefitted from a wider job market. For example, iSchools graduates in the Asia-Pacific and European-African region get public sector jobs in government departments, non-profit organizations (NGOs), and education institutions. North American schools focus on technology jobs in the commercial sector. iSchools graduates from all regions are also employed in public administration departments including law enforcement agencies as well as scientific organizations. Increasingly, graduates from all regions also get jobs in the communication and technology industries. Large companies such as Google, Amazon, Microsoft, Facebook, Starbucks, Huawei, Baidu, and Tencent hire iSchools graduates. Some iSchools graduates from the North American region find work in finance and insurance companies, media, logistics, and manufacturing. Many students go on for a higher degree, especially from the Asia-Pacific region. iSchools' collaborations with companies, hospitals, and the information technology industry are frequent in North American and European-African regions. These results agree with older studies that say that "the applied and interdisciplinary nature of" iSchools programs provide a broader array of job options for their graduates…" (Wiggins and Sawyer, 2012, p20). However, the current study provides further details as shown below.

4.3 Multidisciplinary research focus

This research identified ten broad research areas (as shown in the second column of Figure 2): information management, library science, digital humanities, "informatics+ scenarios", data science, information technologies, archival studies, media studies, bibliometrics, and knowledge management. The third column of Figure 2 shows details of each research theme. The thickness of the boxes indicates the frequency of each code. The links and their thickness between boxes show the co-occurrence of codes and their frequency. Five trends were identified from the analysis:

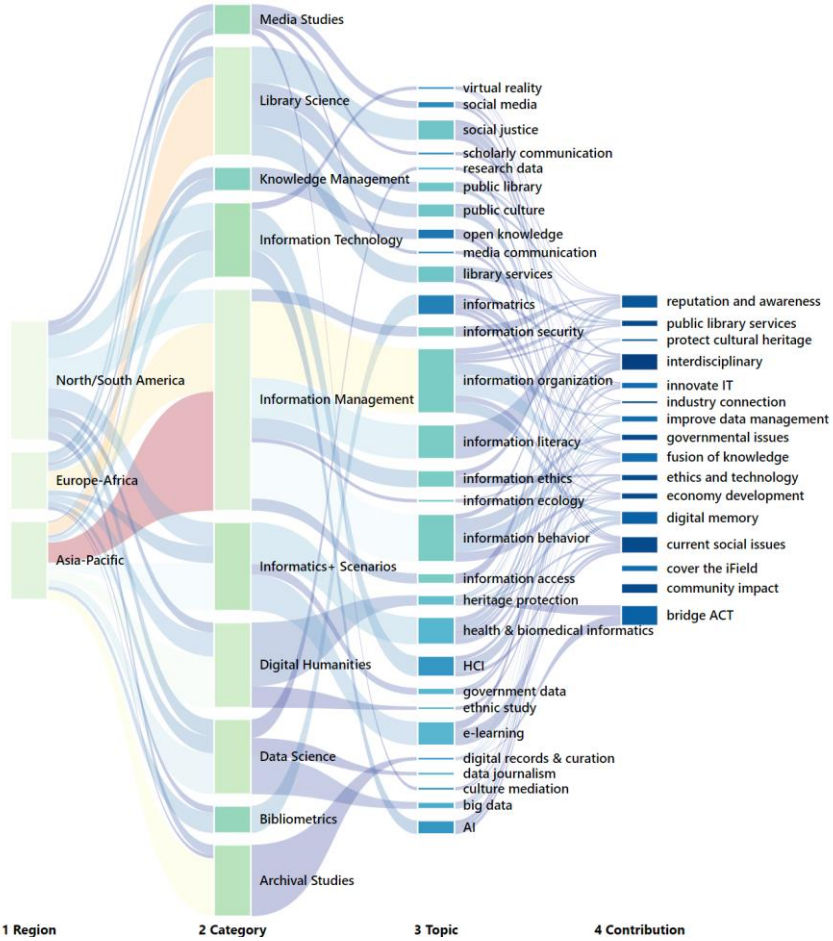


FIGURE 2 Connections between iSchools' regions, research and contributions.

4.3.1 Information management as a dominant research focus

Information management is a dominant research area in many iSchools. Three traditional research topics are still the key focus of information management, which include topics like information retrieval, information standards, cataloging, database design, ontology, metadata, information behavior, and information literacy. Simultaneously, new research topics are drawing attention, including information ethics, and important social issues such as privacy, misinformation and disinformation. Other trending topics include information design, information ecology, and information security.

4.3.2 Moving away from the traditional research scope of library science

Library Science is the second largest research area among the iSchools community, focusing on library services. Many iSchools leaders mentioned the trend of moving away from the traditional library science to data and information technologies. At the same time, new topics are emerging in library science, including social justice, especially where it touches on the ethical and legal aspects of information and knowledge access, or on information equity for gender, ethnicity, and socio-economic groups.

4.3.3 Digital humanities, data science, and informatics+ scenarios as the growth areas

Three new areas are growing. Digital humanities is one example, which was mentioned in 34.67% of the interviews, though many iSchools leaders appeared to worry about the vagueness of its definition. Data science is a growing area that focuses on data management including utilization and techniques. Informatics also plays a role, especially the new trend of the merging of informatics with established areas such as pedagogy (e-learning), government management (smart city), and health and biomedicine. These areas are changing so fast that this new trend has been named “informatics+”.

4.3.4 Combining the technological and humanistic aspects

Some iSchools leaders emphasized their institution’s technology strengths. Some even defined their school as computer science schools. Machine learning, artificial intelligence, virtual reality, information technology, crowdsourcing, human-computer interactions, and human-technology interactions are part of the focus for more technology-oriented iSchools. Nonetheless, a majority of iSchools emphasized the importance of combining technology with humanistic aspects.

4.3.5 Visible differences among regions in research focus

The links between the first two columns in Figure 2 show differences among the three regions for their research focus. The European-African region emphasizes on information security and ethics more than the other two regions. More European-African and Asia-Pacific iSchools treat topics related to information organization as their research focus. More Asia-Pacific

iSchools actively carry out research in library science and archival studies compared to the European-African and North American iSchools. Public culture is a special topic in library science in China. More European-African iSchools carry out research in media studies. Overall, more Asia-Pacific and European-African iSchools are undertaking research in digital humanities than the North Americans. More European-African and Asia-Pacific iSchools also carry out research on cultural heritage, while North American iSchools focus on ethnic studies.

Although all three regions recognize data science as a growing area, their research focuses on different aspects. The North American region focuses on visual analytics, while the European-African region emphasizes applications such as marketing and journalism, and the Asia-Pacific region focuses more on data organization. For information technology, the North American region emphasizes on topics such as virtual reality, modeling systems, and robotic control.

4.4 Impacting society

The links between the third and the fourth column in Figure 2 show how the iSchools' impact society through research. Many iSchools leaders mentioned the effect of research on social services, including economic development, industry evolvement, governmental issues. iSchools also focus on social issues, including misinformation, cyber-bullying, privacy, refugee issues, and social justice. Many iSchools in all three regions are involved in multidisciplinary research in order to increase the social awareness and reputation of the Information discipline in society.

5. THE GLOBAL IDENTITY OF ISCHOOLS

Collaborations among the iSchools gradually builds up a shared identity for information science as a discipline. The collaborations begin with a sense of shared values, especially, as people said, the importance of "people, information, and technology". The diversity and inclusiveness of iSchools balanced tradition and innovation. The humanistic focus offers a basis for the iSchools community for its involvement in current social issues. This study also identified key themes within the iSchools where collaboration exists, with information management, digital humanities, data science, and "informatics+ scenarios" representing the key areas. The iSchools' expertise lies precisely in the ability to work across disciplinary

boundaries. Multidisciplinary research is not new, but it is increasingly becoming a hallmark of iSchools research and teaching.

This study shows how the current identity of the iSchools fits into the three-layer model in Figure 3. First, **people-information-technology is at the core**. Generally, all iSchools research fits the intersection of people-information-technology, but, although all three components are significant (Olson & Grudin, 2009), for many the social and humanistic features put "people" at the center of the information field (Bawden, 2008). Second, **inclusiveness and diversity represent a second layer**. The inclusiveness of the iSchools community brings in the people, theories, and methods from multiple disciplines. Inclusiveness means tolerance to accommodate participants from a range of backgrounds, nationalities, and research focus, and this range makes the community more ready to accommodate new ideas and visions. **the outer layer represents interactions with society**. Because information is so ubiquitous, the iSchools have learned how to bridge disciplines and institutions, which often gives them a central role in collaborations. Such cooperation increases the importance of information science and strengthens community identity. The presence of humans at the centre of research helps to influence and nurture society by focusing on current social issues, and can promote social justice and public good, which is a goal of the discipline.

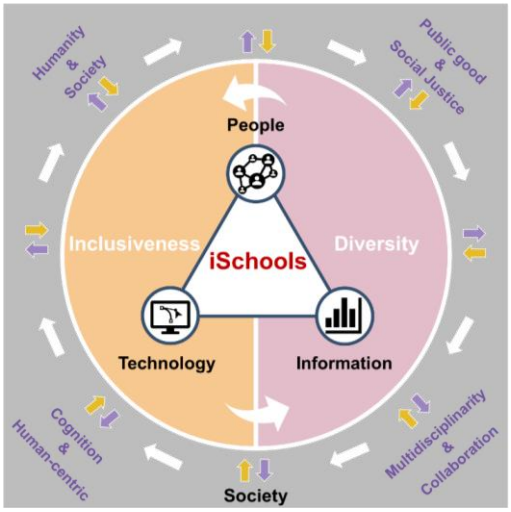


FIGURE 3 Global identity of iSchools community.

6. CONCLUSION, LIMITATIONS, AND FUTURE WORK

This study captured the global landscape of the iSchools organization as perceived by the senior members of the community. Commonalities and differences were identified between the North American region, the European-African region, and the Asia-Pacific region. The key finding of this study – that highlights the point that people, society and inclusiveness are at the core of all the iSchools activities – corroborates past research, such as the study of Shah et al that "the Information Schools, also referred to as iSchools, around the world have been at the forefront of connecting people with information and technology through inclusive and interdisciplinary education and research" (Shah et al., 2021, p.793); and Urs and Minhaj that "the range and diversity of education programs of iSchools are an offshoot of the intellectual antecedents, identity, and forward-thinking of the iCommunity and are anchored to the faculty's identity and disciplinary diversity" (Urs and Minhaj, 2023, p.611).

Information management and library science remain dominant, as seen in their cooperation with libraries, archives, and museums. But this research reinforces the principle that "people" should be at the center of information science, to which Bawden(2008), and Shah et al (2021) agree. The fact that computer science is a key area of collaboration among some iSchools corroborates the finding of Urbano and Ardanuy (2020). Regional differences in research topics and collaborations are also evident (see Figures 1 and 2). Compared to the other regions, the North American iSchools do substantial research on health and biomedical informatics, which creates connections with medical and pharmacy schools, and with hospitals. European-African and Asia-Pacific iSchools focus more on digital humanities and heritage protection, which offers connections with history, anthropology, and museums. This study should help iSchools expand their cooperation with other institutions with similar research strengths.

Commented [GC4]: Do you mean the research reported in this paper, or that the research focus of the European-African and Asia-Pacific iSchools? Please say it clearly

The iSchools community, and the Information Science discipline as a whole, can benefit from this study in three ways. First, it identified the iSchools' shared global identity. Second, it offered examples of international collaboration involving shared research and quality control strategies that can work for other interdisciplinary research communities. Third, this study can help to build strategies that strengthen the iSchools contributions to society. By comparing their own work with others, iSchools' researchers can identify opportunities for future

development and collaborations. In the end this research shows how the diversity and multidisciplinarity of information science can be harnessed by all related disciplines within and outside the universities.

This study has limitations, because the analysis was based only on interviews with a subset of iSchools' leaders. Although efforts were made to improve the consistency of the coding among the three regions, the linguistic diversity may involve other shades of meanings than the English equivalents. Language barriers can affect the results of any cross-cultural analysis, and something may always get lost in translation. Future studies should look more closely at the social influence and contributions of the iSchools community. Future research should also compare the differences between collaborative and multidisciplinary research in the three regions.

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APPENDIX 1: CODING SAMPLE

1st Layer	2nd Layer	3rd Layer	Sample quote
iSchools' Value	Key features	information as the core	I think iSchool is an academic department or an academic program that deals with information at all level, everything that has to do with information
		society and humanity	We spent years trying to inform the university [unintelligible] computer science [unintelligible] then decades on doing that information science is also of value in general. Again, it is a kind of.. in some ways it is very much about personalities
		geographical difference	As a school I find being part of Europe easier··· That's not necessarily true with my American colleagues.
		multidisciplinary	Our institute has the intention of being a bridge between the faculty we are currently in and the Computer Science Faculty. And the idea would be to have some dual affiliation that would be bridging those.
		...	
	Core consensus	connect people and information	It is about sort of making that live for people between information and people are linked. That's what we support, that's what we encourage, that's what we aim everything and doing it.
		tolerant	I think the whole field is very diverse and often not recognized as a strong field. And any kind of organization that better the field back up, I would say, is making the field stronger.
		equality	it's also about equality here as well. Information should be available. People should be able to engage regardless of the states, the education, the location whatever.
		social recognition	I think we should take a role, the iSchools should take a role as experts on information politics. I think we are invisible in public debate
		...	
	Actions	increase social awareness	My approach was to go to a lot of those external meetings. Go out, go out to talk to others, don't just talk to us and say how important and great we are.
		promote research	(i)Schools in developing regions are more oriented to education rather than research. However, top schools in those regions have to show that they are keen to promote internationalization and research.
		education connection	One unique point is that I talked about joining the iSchools, one of the officers said that this community is not like the academic association··· we can have more impact on the academic institution.
		develop the community	An important thing is schools have the willing to develop or improve our community, not for the personal or independent people.
		...	
Positioning	Employment	major companies	They go to industry, government, uhm, the industry one is really interesting because a lot of the industry, we find, wants practice librarianship skills. They don't know it until they can see that the people can build ontologies and know how to structure.
		information industry	All the field of web design and management, everything that has to do with web computing, internet
		government	Some of them they like government jobs. They like to go to the government.
		library	About 60% go to libraries - this is my personal rough estimate.
		...	
	Social collaboration	libraries	We have good links, with the academic library at our institution
		IT companies	There is some collaboration with IT companies. With the practical work that the students have to do, some projects with the companies that are possible future employers.

		government departments	We have connections with National Health Service, with major charities, with the Red Cross, with government, with big industry
		national funds	Almost all the staff members in our department have national funds to support their research.
		...	
	Cooperation within the university	computer science	We collaborate with a lot of other departments in our university, you know, with religious studies and computer science and management department in terms of sometimes projects, and we have conducted academic programs, yes.
		history and anthropology	We had some collaborations with the history department. They discovered digital humanities and they realized they can scan some documents and put into a collection, so they needed some help.
		statistics & mathematics	So together with college of statistics, school of statistics. So slowly we were able to stamp or mark as an iSchool. So they are slowly recognizing the importance of alliance, as an iSchool.
		literature & linguistics	We have people who work with staff that deals directly with linguistics. For example, reading studies and second language acquisition, and staff like this and also some humanities areas in this field.
		...	
Legacy	Research focus	information management	So the kind of research that we do is research in information behavior, research on information access like search engines, recommender systems, visualizations
		library science	The second one has been very, very strong in our school is public libraries, which is, many would say, oh that is yesterday's news, but we have very strong libraries tradition. We have, we receive a lot of external funding on research on public libraries. So we have a strong research area there.
		data science	One is the whole approach to data science. We are adding more courses, so our graduates can be called data analysts
		digital humanity	We are a small school, so we have like one or two people doing this kind of work, digital cultural heritage.
		...	
	Contributions	social services	Our study about company brands analysis benefits the economic development of the country. We provide annual report about the development of our own brands in the country.
		intellectual exchange	As everybody does, we really want to, really produce quite much of research, writing papers, and presenting in conferences, and that's really intellectual exchange we want to be actively engaged in.
		digital memory	We started quite early in practical research about digital memories, the digitalization of cultural heritage and its long-term preservation.
		build the community	These meetups, the idea there is to bring together different communities. So people from industry, people form academia, but people beyond our institute, although we run this, ehm, we started this meetups.
		...	