

Articulating the Unarticulated Element of the Information Science Paradigm

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This article focuses on the traditional areas of public, school, and academic libraries that have generally declined in schools of library science, even though the labor force in these sectors has remained relatively stable. Information technology has altered the structures and influenced the design of academic programs of information studies and in doing so, enhanced their liaisons with schools of education, management science, communications, computer science, and applied science. Like an advanced ecosystem, both overlap and diversification of students in information studies has increased.

Introduction

Although survey data disclose that traditional content and delivery continue to be stressed, educators still ponder the fact that the new combinations of knowledge, attitudes, and skills in the workplace may require something more of library and information science (LIS) educators. A de-emphasis on traditional content has resulted. Professional education and practice call for multiplicity, academic self-sufficiency, and adjustment to local needs and aspirations. The problem surfaces when students are so exceedingly diverse as to resist common boundary.¹ There is a need for these types of problems to be discussed in light of curriculum changes and for a common boundary in instruction to be defined. Analytical studies to articulate the unarticulated part of the information paradigm may help to conceptualize the information science substance more clearly.

Statement of the Problem

Bates believes that the state of affairs in library and information science indicates a significant point in time. She states:

Today, in information science, many newcomers without a background in the field are coming in. An understanding of the unarticulated part of the information science paradigm can no longer be assumed on the part of these newcomers. At this historical junction, information scientists need to become more conscious of the thought-world we are operating out of, so that we can communicate it more rapidly and effectively to large numbers of new people, and so that we can continue to influence the future of information in the twenty-first century.²

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Boyce implied that such a thought-world originates with professional standards:

Professional education is about standards, not just the technical standards for the operation of an information facility but the normative standards, the values, of the profession. Technical standards change over time, and require us to maintain knowledge of their current state. Our normative standards are not quite so volatile and perhaps for that reason, more easily neglected.³

Reporting on the 1999 ALA Congress on Professional Education, Prentice listed the values that need be acknowledged in courses:

From a long list, the following were highlighted:

- Information access skills;
- Ability to deal with information technology;
- Communication skills;
- Management skills; and
- The ability to deal with change.

While these focus on the skills area, values included intellectual freedom, professionalism of the individual, the service ethic, and respect.⁴

Perhaps neglect of normative standards has contributed to the problem of defining the information science paradigm. Since professional education and practice call for diversity, academic autonomy, and adjustment to local needs and aspirations, normative standards themselves are difficult to define.

Rather than clarifying the theoretical base for library and information science as Bates and Boyce suggest, some experts express the opinion that although the skills and attitudes relevant for nearly all types of information work and librarianship remain current, education will have to depart from a theoretical and research-based platform in information science. The rationale for this opinion is also a matter of relevance. As Pors notes,

The user groups are different, their information needs are different, and the organizational structure and the economic conditions can be very unlike traditional libraries, but most librarians perform functions of information management and information transfer.⁵

The underlying root of the problem as identified by Pors was the requirement to provide generic courses in order to provide students with skills and knowledge

common to all occupational groups. The result is a tension between the need to retain core courses, as these are perceived to underpin the practice of information and library studies, and the need for increased courses that provide technology-based skills.

Bates sees this tension as a type of war:

There is something of a culture war going on these days between those in the field who see the institution of the library and all it has meant to our society as the defining core of our field and those who employ the concept of information to define the field. To these 'library' partisans the information perspective means pure computer technology carrying with it implicit authoritarian, even fascist, adoration of the power of technology, to the detriment of precious human values.⁶

Acknowledgement of this controversial aspect leads to the assumption that one problem in the library and information studies curriculum is just the mix of the traditional core disciplines with information technology and marketing subjects. The solution, so to speak, has been part of the problem. The mix is unsuccessful in creating both generalists and specialists. The problem is a significant one because, as mentioned previously, students drawn to the program are so diverse in undergraduate disciplines as well as work experience. Faculty members themselves are responsible for changes in program offerings, curricular shifts, and inter-disciplinary initiatives. It is logical that the understandings that influence the faculty members' conceptualizations as well as their rationalizations are worth investigating. Such understandings will influence the type of climate offered to information studies students, and it is important that this climate be a positive and collaborative one. Faculty members are motivated to contribute to the divisions by their understandings of what subject areas should be taught and how they should be taught.

A study recently conducted at the Nanyang Technological University (NTU), School of Computer Engineering, Division of Information Studies addressed the problem of curricular adaptation to the controversial aspect within the discipline. The purpose of this study was to identify the perspectives and underlying attitudes of information studies faculty with regard to the ability of the curriculum to prepare students for many different kinds of specialties, as well as the ability of the faculty to advance knowledge in interdisciplinary fields. The results of this study would reflect upon the need for value-based education and skills-based education and help clarify the information studies paradigm.

In the face of diversity regarding the employment future for our graduates as well as the multidisciplinary literacy that we must communicate, what are the emphases on market driven skills and technology in the new core curriculum? This study looks into the difficulties and complexities involved in converging and diverging markets, emerging technologies, and value-based professionalism. The case study has focused on the following questions:

1. How can common areas for diversified groups of students be provided while at the same time distinct specializations are maintained?

2. How can a balance be maintained in skills-based topics and philosophical and professional issues (value-based topics)?

Background of the Locale of the Study

The Information Studies Division of the School of Computer Engineering at Nanyang Technological University was established in 1993 in Singapore and was charged with the following mission:

To educate graduates in any discipline into a new breed of Information Services and Systems professionals who are able to develop and deliver value-added information products and services in all types of information-rich environments by drawing upon the disciplines of library and information science, information management and computer technology.⁷

The academic programs at the Division of Information Studies have gone through three major revisions since the inception of the Division in 1993. The structures of the program revisions are given in Appendices A, B, and C. The Division is trying to fulfill its mission through several graduate education and research activities. Major among these is a master's degree program in information studies. A master of science (MSc) degree in information studies is awarded to students after the completion of nine three-credit hour courses and a dissertation project.

Currently the Division has eight faculty members, seven hold Ph.D. degrees awarded by universities in the United States and United Kingdom, while one holds a master's in information studies and is working for a Ph.D. in knowledge management. Some specialty knowledge areas represented are computer science, business, information retrieval, multimedia services, youth services, and academic librarianship. The number of teaching staff is expected to rise to ten in August 2001.

The MSc information studies program at NTU embodies the features of the course-work of an American school and a thesis component of the Euro-Australian model. Research groups in three main areas facilitate collaborative research across the Division, and they are Information Retrieval, Information Management, and Information Services and Policy. Students come from a variety of backgrounds, including libraries, information systems, education, computing, and business-related disciplines.

Research Design and Methodology

In this exploratory case study, the phenomenon investigated was the process of curriculum building by a team of educators, and open-ended discussions served as an investigative tool for making sense of the process. We used focus group discussions for data collection. This methodology was considered appropriate because of several factors: the qualitative nature of the problem, the limited number of respondents interviewed, and the purpose for which the group was gathered. Discussion and consensus on the curriculum core, specializations, and areas of concentration to be offered, as well as desired emphasis and orientation of the program all formed the subject area criteria for this study. Powell defined a focus group as "individuals selected

and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research.”⁸ While considering the employment of this methodology, the limitation of the diverse backgrounds of participants was acknowledged, and a concerted effort was made by the researchers to overcome these difficulties.

Focus groups have been used elsewhere in the evaluation of programs of education. For example, Oberg reported on a focus group interview used as a tool for program evaluation in school library education at the University of Alberta, Department of Elementary Education. She wrote, “the purpose of a focus group is to develop an understanding of the participants’ experiences or views about an activity, a program, or a product or service.”⁹ Although the purpose of the focus group itself is not generalizable, within a case study context, the researchers can make some generalizations.

According to Morgan and Kreuger, focus groups are particularly useful when there are power differences between the participants and decision-makers or professionals, when the everyday use of language and culture of particular groups is of interest (in this case the culture of country origin and academic background), and when one wants to explore the degree of consensus (and any correlations of co-occurrence).¹⁰ All of these factors were of relevance to the researchers, particularly in light of power differences produced by the interaction between participants.

Data Collection

Focus groups involve the researcher as participant observer.¹¹ Because two researchers were involved in the facilitation of the focus group, one moderator facilitated and the other took notes. Data were collected through the use of an interview guide (Appendix D) composed to elicit the opinions of the information studies (IS) program educators. While the interview guide provided a general framework for discussions, the specifics of the approach evolved as they proceeded because of the “multiple realities” encountered in the social interactions of the group. The researchers endeavored to enter the informants’ worlds and through the ongoing interaction of the conversation sought out the informants’ perspectives and meanings. In this way, the researchers attempted to reconstruct the participants’ multiple realities. This is known as “idiographic interpretation” because it involves interpreting participants’ perceptions and experiences, and interpreting how these make sense. Idiographic interpretation is an anti-realist approach in the social science disciplines.¹²

The focus group methodology was considered appropriate to review the perceptions of faculty and colleagues regarding the theoretical foundations of library and information science education, specifically, how these perceptions would emerge in the experience of curriculum development discussions. Subjects’ remarks in focused group interviews served to validate and explain reasons why respondents held particular beliefs and feelings about the curriculum. The series of discussions with colleagues in the division were held in the context of curriculum development and as a case study approach were exploratory in nature. An interview guide based on

the research questions stated elsewhere in this paper was used to converge group discussions. The focus group interviews helped identify the faculty's feelings and beliefs or attitudes about information and their influence in shaping their perceptions about the essential components of the information studies core. The interviews allowed the researchers to explore in depth the perceptions of educators. Transcripts of the group discussions were noted. Deliberations took place in a conference room centrally located in the School of Computer Engineering, and an oval table was used. The meeting and unstructured interviews were conducted over a period of three months, and were held twice a week.

In their recent article, Dresang and Robbins stated that learning and organization theory intersect within the organization so that the organization can learn to respond to a dynamic environment. Small, self-organized, and informal work groups are known as communities of practice. Communities of practice are the most important structure of an organization because they generate learning.¹³ The focus group used in this study was conceptualized as a community of practice. A community of practice approach involves a commitment to viewing reality as socially constructed, and to treating data as dependent on the social context of the research interview.

Discussion

Core Courses and Tracks

The focus group unanimously agreed that in order to cater to the diverse population of students, the core course component should be decreased so that only areas of common interest are included in foundation courses. A modular format for the information studies division was seen as necessary to accommodate a divergent student body.

When the IS program was first instituted at NTU, seven out of eight courses were compulsory. With the steady growth of students and lecturers over the years, more diversity was required. After the second revision, the number of core courses was reduced to four (see Appendix B).

Considering the difficulties experienced in teaching core courses with topics not in line with the background of the entire class, consensus was reached that two distinct tracks needed to be introduced to the existing curriculum, a library services stream and an information management and systems stream. To reinforce such a direction, the focus group stressed that to achieve the objectives, topics covered in courses such as information technology, research methods, the management of information agencies, client-centered library services, and the design and delivery of information services should be integrated into specialized courses. It was agreed that compulsory courses should be further reduced from four to three as the contents were more common and acceptable to advocates of both tracks. Focus group discussions identified core topics, which were grouped into three subjects:

- Information Society and Users
- Information Sources and Searching
- Information Storage and Retrieval

Skill Emphasis

Elkin identified a need for a technology-based syllabus in the information science curriculum and did not see the information technology (IT) component as separate from the more traditional library and information skills; information studies programs provide generic courses in order to provide for skills and knowledge common to all occupational groups. She noted that such a decision resulted in a tension between the need to retain core courses—as these are perceived to underpin the practice of information and library studies theoretically speaking—and the increasing need for courses which provide technology-based skills.¹⁴ We also reached the consensus that the syllabus should emphasize the implications of IT for the traditional and enduring skills of information management. The discussions did indicate that the faculty members with more flair in computer science insisted on a course emphasis on technical skills; faculty with a business background wanted to emphasize the communication process; and academic staff members with a background in library and information services felt the need to emphasize history, philosophy, user perspectives, and professional values.

The earlier curriculum offered only one elective, whereas subsequent revisions introduced four. The integration of technology and research methods in all curriculum courses was supported so the required emphasis on information management remained. To highlight the user perspective further, the core course of Information Society was expanded to place more emphasis on user perspectives. This expansion and renaming to Information Society and Users was considered necessary for coverage of value-based education, drawing on an inclusion of topics like history and philosophy of information, and the role of professional forums. Such a course would also offer a balance between the managerial and technical aspects of information.

Multi-level Specialized Courses

The focus groups deliberated whether a two-tier electives component should be introduced to accommodate distinct specialized groups, librarians, and information managers. They recommended that after completing the foundation course in the first semester, the students should be required to complete a set of courses aimed at ensuring the basic professional competencies. It was recommended that two prescribed electives should be chosen from the following selections:

- Human Computer Interaction
- Information Management
- Information Organization
- Internet and Web Technologies

This stage was considered important to distinguish between the students on the basis of their background, interest, and intended career. This was considered necessary as various groups had been criticizing the lack of focus in the program.

Free Electives

The group felt that after completing the core and prescribed electives, students might pursue specializations at a more contextual and meaningful level. It was

recommended that the students be allowed to select four free electives from a wide list that currently includes 27 courses. These electives are listed in Appendix C. To enrich the specializations and areas of concentration, it was suggested that students should also be allowed to take courses chosen from other master's level courses offered by other graduate schools in the university.

The group felt that in order to improve the analytical skills of students and to appreciate the value-based education and its relevance to practical work, the dissertation was an important part of the program. Students need to be able to harness the knowledge, skills, and attitudes acquired through the courses and apply them to an independent project to solve a range of information-related research problems, thereby discovering and creating new knowledge or developing new information products or services.

Multiplicity of Skills

The faculty stressed that the syllabus would emphasize the implications of IT for information management science. This was in line with Bates' suggestion that:

The two most important methodological traditions we draw on are the social sciences and the engineering sciences. Some individuals in the field are more interested in, and more capable in, either the social or the technical side of this equation. But to function effectively in information science, one must be at least comfortable with both sides of this dual tradition.¹⁵

Like their European counterparts, Elkin, Wilson and Pors,¹⁶ the focus group emphasized the multi-disciplinary nature of work environments of information professionals and argued that information professionals need a portfolio of skills that include technical skills in order to function well. A 'pick and mix' approach to professional graduate education development was needed. Even though skills need to be rooted in practice, no one could be expected to acquire all skills required, nor would they need to do so. The portfolio acquired would have to include skills that would complement those of teaching, research, computing, and other staff in higher education. The multi-disciplinary nature of work justified such a portfolio.

The participants of the focus group discussions also recommended that a value statement be added to the library and information science modular program as an introduction. It stated the following:

There will also be a growing need for professionals who are knowledgeable and concerned about the social and policy issues attending the knowledge-based society, and who have the appropriate commitment, values and attitudes to be information intermediaries, custodians, guides and advocates to help individuals and social groups participate and flourish in the emerging knowledge-based environment.¹⁷

The values of service and client-centered practice would thus remain applicable in the library services stream.

Conclusions

The focus group participants did agree on the need for streaming and specializations, but emphasized the importance of self-direction in accordance with student needs and interests. By avoiding the rigidity of prerequisites, a more balanced curriculum might be offered.

The results of this study did reflect upon the need for value-based education along with skill-based education. However, traditional meanings of what value-based education means would no longer be applicable. Understandings commonly held as traditional, such as values rooted in the history of library science or information science or the mastery of subject area literature as a discipline, would now be understood in the form of meanings of information science in students' lives. This would address the field as a developmental one rather than a prescribed one, as well as tip the scale of information science from being value neutral (in the engineering sense) to value laden (in the services sense). Such a developmental perception of the field also freed faculty from prescribed syllabi and allowed more individual interpretation of assigned subjects.

The recommendation of the focus group to add a value statement to the introduction for the library and information services stream of the master's degree program also highlights the importance of value-based education. The members felt that the current description emphasized skills too much and had neglected values, particularly those of public service. Clearly, the balance of skills-based topics and values-based topics as well as philosophical and professional issues cannot always be sustained unanimously; however, educating students as potential managers of IT as well as the human record was believed to be conceptually thematic and viable. Information handling responsibilities are to be communicated in the creating of information professionals and will define "character" as necessary for articulation of the information science paradigm. Like the vision articulated by Wiegand,¹⁸ a service orientation will be part of the character of the information intermediary so as to counteract the pull of technology and the promise of money and professional power.

Postscript: The Information Studies Division changed its academic affiliation from the School of Computer Engineering to the School of Communications Studies in July 2001. At the most recent curriculum meeting, a number of staff proposed that the IS division create an undergraduate curriculum for a B.S. degree in Information Studies. At the same time, it was also proposed to add a new graduate program ultimately leading to an MSc in Knowledge Management.

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Appendix A

Initial Structure

Core Subjects (Compulsory)

- H6101 The Information Society
- H6102 Applications of Information Technology
- H6103 Management of Information Agencies
- H6105 Services to Users
- H6106 Research Methods in Information Studies
- H6108 Information Sources and Services
- H6109 Organization of Information

Electives (One subject to be chosen from the list)

- H6126 Organization of Information in Automated Environments
- H6127 Conservation Management
- H6128 Electronic Database Evaluation
- H6129 Electronic Database Use
- H6130 Design of Information Systems and User Interfaces
- H6131 Management of Information Systems
- H6132 Records Management
- H6133 School Librarianship
- H6134 Literatureship for Children and Young Adults
- H6135 Information Needs, Sources & Services in Business & Economics
- H6136 Information Needs, Sources and Services in Arts & Humanities
- H6137 Information Needs, Sources and Services in Science & Technology
- H6138 Management of Academic Library Services
- H6150 Research Paper
- H6151 Special Topic
- H6299 Dissertation Project (Compulsory)

Appendix B

Structure After Revision

Core Subjects (Compulsory)

- H6301 The Information Society
- H6502 Information Sources and Searching
- H6503 Information Storage & Retrieval
- H6504 Design & Delivery of Information Services and Products

Electives (Any four subjects are to be chosen from the list)

- H6321 Bibliographic Organization
- H6322 Developing Corporate Information Systems
- H6323 Computer Programming for Information Professionals
- H6324 Systems Analysis and Interface Design
- H6325 Management of Information Agencies

- H6326 Collection Development & Management
- H6327 Client-Centered Library Services
- H6328 Database Management Systems
- H6329 Business Information Sources and Services
- H6330 Children's Information Sources and Services
- H6331 Development of Internet Services & Products
- H6332 Evaluation of Information Services & Products
- H6333 Information Retrieval Systems
- H6334 Intelligent Information Systems
- H6335 Conservation of Information
- H6336 Research Methods in Information Studies
- H6337 Data Communication and Networking
- H6350 Special Topic 1
- H6351 Special Topic 2
- H6399 Dissertation Project (Compulsory)

Appendix C

The Proposed Structure

Core Subjects (Compulsory)

- H6501 Information Users and Society
- H6502 Information Sources and Searching
- H6503 Information Storage and Retrieval

Prescribed Electives (Any two subjects are to be chosen from the list)

- H6511 Human Computer Interaction
- H6512 Information Management
- H6513 Information Organization
- H6514 Internet Technologies

Free Electives (Any four subjects are to be chosen from the list)

- H6521 Academic and Research Libraries
- H6522 Archives and Records Management
- H6523 Cataloguing and Classification
- H6524 Library Services for Children and Young Adults
- H6525 Collection Development and Management
- H6526 Digital Libraries
- H6527 Public Libraries
- H6528 School Media Resource Centers
- H6529 Business Information Systems, Services and Sources
- H6530 Electronic Commerce
- H6531 Imaging and Document Management
- H6532 Information Mining
- H6533 Knowledge-Based Organizations
- H6534 Knowledge Management

- H6535 Computer Programming for Information Professionals
- H6536 Data Communication and Networking
- H6537 Database Management Systems
- H6538 Web-Based Information Systems
- H6539 Information Retrieval Systems
- H6540 Intelligent Information Systems
- H6541 Multimedia Information Systems
- H6542 Systems Analysis and Design
- H6543 Investigative Methods for Information Studies
- H6544 Special Topic 1
- H6545 Special Topic 2
- H6599 Dissertation Project (Compulsory)

Appendix D

Interview Guide

The interview guide contains only lead questions. Questions on questions and comments and discussions on responses are encouraged. The guide is designed to provide a framework for discussion. The researchers act as facilitators and moderators to keep the discussion focused, provide clarifications if needed, and take notes of the discussions. Discussions are not taped and responses are not transcribed in verbatim. Instead, a summary of discussion is prepared after every meeting indicating areas of consensus on issues and differences of opinions. This summary is shared with the focus group participants for validation and verification purposes. The focus group deliberations will focus on three main points: curriculum core and foundation, specializations and areas of concentration, and desired emphasis and orientation of the program.

Foundation and Core Courses

The Division of Information Studies is dealing with a very diverse group of students in its master's program. It currently has students with backgrounds in engineering, computing, business, education, and a variety of other disciplines of sciences, social sciences, and humanities. They have joined the program with different expectations; some very focused on information technology, some look for education on the soft side of information management, while the others still want to focus on traditional topics in library and information services. Among other things, the Division has been challenged to design core courses that satisfy the need of this diverse group with a variety of backgrounds, interests, and expectations. The focus group participants are invited to debate issues related to the common core while trying to answer the following and other similar questions:

- Should we reduce the number of core courses (currently four)?
- Should the students be divided into groups in accordance with their background and asked to take a different set of foundation courses?
- How can we create a balance in covering technical and general topics in foundation courses?

- What steps can be taken to make sure that only common topics are taught together?
- How can diversity in background be turned into strength rather than a hindrance to enrich the learning environment?
- What is a reasonable number of core courses for a generic master's program like ours?
- What areas should be specifically covered in core courses?

Streaming, Tracks, Specializations, and Areas of Concentration

We have kept our program deliberately general in nature, mainly keeping in view the job market. But this generalization is sometimes used to criticize the lack of focus in our program. Concerns have been expressed and suggestions put forward by potential employers, current graduates, and alumni, to work out a balanced approach by allowing different tracks (information management and library services, for example), and providing a mechanism to develop areas of concentration to those who would like to specialize in a narrowly defined area. The focus group participants are invited to debate on streaming and related issues focusing on the following and similar questions.

- Is it advisable to introduce streaming for a small program?
- If streaming is desirable, what areas should be chosen for this purpose (IT, Information Management, Information Systems, Librarianship, Library Science, Library and Information Services)?
- Should the chosen tracks (like Information Management and Library Services) be run like parallel programs or will some sort of common course still be desirable?
- If there are distinct differences in the chosen tracks or streams, how do we provide for knowledge and skills that may be desirable as prerequisites?
- Should there be tiers of coursework, for example, required courses, specialized courses, and advanced courses?
- At what state should specialization be allowed?
- What are the appropriate areas that should be considered for specializations?
- What mechanisms, other than the courses (e.g., dissertation/projects, courses in other schools and departments) should be considered to enrich specializations?

Emphasis/Orientation

We have also been criticized of being too much skills and competencies oriented, and at the same time our program seems to have been perceived as "putting too much emphasis on historical and theoretical professional topics." Concerns have also been expressed on our emphasis on teaching rather than learning. We are caught up in a situation where we would like to follow the latest trends in the profession, but are still required to work within the requirements of the system and institutional policies. We would like to invite our colleagues for brainstorming on this interesting issue of incorporating values in our program and encouraging a learning centric approach in our teaching methodology. Please try to answer the following and other

similar questions:

- What should be our main emphasis or orientation (skills, users, or values)?
- What skills and competencies should be emphasized in the program?
- What values should be highlighted for information professionals?
- What is the role of an instructor in instilling the desired professional values?
- How do we keep the user in focus (when there is so much emphasis on technology)?
- How do we maintain a balance in imparting training for hard and soft skills?
- How do we impart value-based education?