PROMOTING QUALITY METADATA IN LIBRARIES: THE ROLE OF EDUCATION

Ross Harvey
Charles Sturt University
Locked Bag 675, Wagga Wagga, NSW 2678, Australia
e-mail: rossharvey@csu.edu.au

ABSTRACT

This paper considers the current state of education for bibliographic organisation, considered broadly and encompassing descriptive cataloguing, subject access, classification, metadata, knowledge organisation, bibliographic control and other related areas for all formats of library resources. In it, Australia is used as a case study. Data comes from subject and course descriptions located in the handbook entries and web sites of Australian university-level programmes in library and information studies. Conclusions are drawn about the range of subjects taught, their focus, and their levels. The paper also considers some aspects of teaching bibliographic organisation by distance education, a mode rapidly becoming the norm for students enrolled in library and information science courses, and notes some of the issues associated with teaching bibliographic organisation in this mode.

THE IMPORTANCE OF BIBLIOGRAPHIC ORGANISATION

One of the few areas in which library and information sector practice can claim to be different from practice in other parts of the information industry is bibliographic organisation. Bibliographic organisation practice underpins almost everything that libraries do: as only one example of the many available, library catalogues indicate resources and holdings, thus enabling reference librarians to fulfill the information needs of users. The library and information sector has well over a century of in-depth expertise in providing access to information resources – from 1901, when the Library of Congress started offering its catalogue cards for sale, but note other dates could be selected (Harvey 1999, p.110-111) – and a substantial amount of research in this area has occurred since the 1950s. Many of the lessons learned and applied long ago by the library and information sector are now being rediscovered and applied in new contexts such as knowledge management and web resource discovery.

However, recognition of the significance of bibliographic organisation as the key to effective libraries appears to be under threat. This has been identified in

library and information science courses in the United States, where a recent study indicates that 'cataloging education has indeed been reduced' (Hsieh-Yee 2003, p. 13). The current emphasis in the library and information sector is on user needs, information literacy, and information seeking behaviour. While an increase in emphasis on user-centred practice is undoubtedly valuable, it appears to have become the primary focus of many library and information science education programmes. This emphasis is misdirected, because effective systems for locating information resources are required for a user-centred focus to be successful – users cannot be served adequately, their information needs cannot be met, and they cannot be taught to use information resources effectively, if the bibliographic organisation systems are not well developed and do not function efficiently. Therefore, an essential component of all library and information science courses must be solid bibliographic organisation subjects. In fact, there is an increasing need for 'cataloguing and metadata skills' in the changing information environment, where they are 'critical to information organization, access and services' (Hsieh-Yee 2003, p. 13-14). The trend towards not requiring cataloguing subjects in the United States is 'troubling because all students need to know about how intellectual and physical access to information resources is provided to function well as an information professional' (Hsieh-Yee 2003, p. 36). This concern is not limited to library and information science education in the United States, but applies equally elsewhere.

To be fair, this apparent lack of recognition of the central role that bibliographic organisation practice plays is not new, as Sarah E. Thomas indicates:

> *Recently a small tract documenting an address to the New York State Library School in 1915 by William Warner Bishop [Cataloging as an Asset] found its way to my desk … He declares: 'Catalogs and catalogers are not in the forefront of library thought. In fact, a certain impatience with them and their wares is to be detected in many quarters. Shallow folk are inclined to belittle the whole cataloging business … I think I am safe in saying,' he adds, 'that most students in library schools would rather do anything else than take up cataloging on graduation.'*
> (Thomas, 2000)

In this paper bibliographic organisation is considered broadly, encompassing descriptive cataloguing, subject access, classification, metadata, knowledge organisation, bibliographic control and other related areas for all formats of library resources.

CATALOGUING OR METADATA?

It is obvious to even the most casual observer that libraries have changed significantly over the last two decades. Discussion abounds about paradigm shifts for libraries. The most significant reasons for these changes are the increasing amounts of information available in digital form, the prevalence of networked computing, and the increasing reliance of libraries, librarians, and their users on networked information. These major changes have also affected bibliographic organisation practice. Examples are plentiful, such as the rewriting of library cataloguing rules to accommodate digital media, and the restructuring of major bibliographic classification schemes so that they can be applied more readily to providing access to web-based information.

The very language of bibliographic organisation practice is changing. Instead of *cataloguing books*, we *develop metadata* for *information resources*, which may be *digital objects* (objects that can be represented by a computer, for example web pages, databases, spreadsheets, word-processed documents, video, audio, images, and maps) that do not have a physical existence. Where we identify the author of a book and describing its physical characteristics (number of pages, height and so on) in a catalogue record, for digital objects we may also add metadata elements such as format and resource identifier (for example a Uniform Resource Locator), and information about rights held in and over the resource (for example, intellectual property rights, or copyright).

These changes are being reflected in the teaching of bibliographic organisation. The competencies required by graduates from library and information science programmes now need to include knowledge and skills relating to the intellectual control of digital information resources. Perhaps the most obvious indication of this is in the titles of subjects about bibliographic organisation practice. These no longer have titles such as *Cataloguing* and *Classification*, and instead are much more likely to be titled *Organising Information* or variations on this. This is definitely the case in Australia, as the data discussed later in this paper indicates. It is also the case in other countries.

Perhaps the most obvious illustration of these changes in the educational context is a report prepared in 2002 for an ALCTS/ALISE Task Force (Association for Library Collections and Technical Services/Association for Library and Information Science Education) titled *Cataloging and Metadata Education: A Proposal for Preparing Cataloging Professionals of the 21ˢᵗ Century* (Hsieh-Yee, 2003). This report was prompted by a major initiative of the Library of Congress, its Action Plan for Bibliographic Control of Web Resources. It proposes a 'model curriculum for cataloging and continuing education' (Hsieh-Yee 2003, p. I) for the next three years, to 2005. Three levels of expertise are

proposed: 'expertise for all LIS graduates, expertise for metadata cataloguers, and expertise for leaders of cataloging and metadata projects' (Hsieh-Yee 2003, p. III). One section of the report briefly lists some of the bibliographic organisation knowledge that metadata experts and practitioners consider is required by the new graduate. As well as 'a general understanding of AACR2, MARC, Z39.50, name and subject authority, and classification schema', 'an overview of metadata' and of 'interoperability' is necessary, as well as 'general understanding of ISBD, APPM, TEI, Dublin Core,GILS, FGDC, VRA, EAD, Metadata crosswalks, HTML, XML, SGML' (Hsieh-Yee 2003, p. 9).

AUSTRALIAN PRACTICE

Australia is used in this paper as a case study – but it should be noted that education for librarianship and information studies in Australia is not significantly different from other Anglo-American countries, so the conclusions in this paper are widely applicable. Data comes from subject and course descriptions located in the handbook entries and web sites of Australian university-level programmes in library and information studies.

It is helpful to be aware of some of the range of professional qualifications in library and information studies that exist in Australia. The main professional qualification is, and has always been, the graduate diploma, equivalent to a full year's study of librarianship following a bachelor level qualification in any discipline. Other qualifications, such as the masters degree, were not of much interest to the Australian profession until the 1990s, but are slowly gaining ground. Bachelor degrees offering a first professional qualification in library and information studies were introduced in Australia in 1971 and are now popular. A qualified library and information studies professional who has gained an Australian qualification can currently attain professional membership of ALIA (the Australian Library and Information Association) with either a bachelors degree in LIS, a graduate diploma, or a masters (Harvey and Higgins, 2003). Professional recognition by ALIA of a programme is very important because the holder of a recognised qualification can be granted professional membership of ALIA automatically on application, and many employers require it. All ALIA-recognised schools offer subjects that include some bibliographic organisation content, because in order to achieve and retain ALIA recognition, they must provide content that covers 'Processing of information, demonstrated by the ability to enable information access and use through systematic and user-centred description, categorisation, storage, preservation and retrieval' (ALIA, 2003).

In 2003 there are twelve university level schools offering programmes in library and information studies in Australia, offering 26 recognised programmes (see

Table 1). The bibliographic organisation subjects currently taught in these programmes can be loosely characterised as of two kinds:
- those that are closely grounded in traditional library practice
- those that are based in a wider information context.

Subjects in the first of these categories typically focus on tools such as AACR2, DDC, LCSH and MARC, and on practices such as copy cataloguing and acquiring records from bibliographic utilities. Subjects in the second category typically examine topics such as how information objects are structured, metadata, DTDs and schema. Appendix 1 provides more detailed descriptions of some of the subjects.

BIBLIOGRAPHIC ORGANISATION IN AUSTRALIAN SCHOOLS

This study sought to identify more precisely what is being taught in bibliographic organisation in Australian schools of library and information studies at university level. This limited aim, it was felt, would provide useful evidence that would be capable of being generalised to a wider area, as Australian practice is indicative of that in other Anglo-American countries. It is part of a larger study that will examine the wider context of bibliographic organisation education in Australia, adding to this data about university level programmes other information about education at the technician level, continuing education activities, and in-house training.

The starting point for the data gathered in this study was the web site listing courses recognised by ALIA (http://www.alia.org.au/education/courses/ librarianship.html). The data used was extracted in June 2003, but it should be noted that the information on this site relates to courses offered in 2002, and that there have been changes. Despite these changes, the data is valid in that it provides a strong indication of what is being taught. It should also be noted that all subjects are of a standard length of one semester, usually 12 or 13 weeks in duration and two to three hours per week of contact time. There are some variations, such as those subjects taught in the distance education mode where the number of contact hours is not relevant, but the generalisation is valid.

Table 1 lists the 12 Australian universities offering programmes in library and information studies recognised by ALIA, the 26 courses offered, the bibliographic organisation subjects offered in each course (totalling 25), and a brief characterisation of the content of each subject. This data comes from the ALIA web site and from the web sites of the universities. Appendix 1 presents the abstracts of some of the bibliographic organisation subjects, taken from the web sites of the universities.

Table 1:Course and Subjects Offered by Australian Universities

---

University of Canberra, Division of Communication and Education, Information Studies Programme

- *Bachelor of Communication (Information):* 005821 Information Organisation (required) – Focuses on library practice
- *Graduate Diploma in Library and Information Management:* 005188 Cataloguing G (required) – no information available

Charles Sturt University, School of Information Studies

- *Bachelor of Arts (Library and Information Science):* INF102 Organising Information (required) - Focuses on library practice; INF116 Describing and Analysing Information Resources (optional) - Metadata standards; broader information context; focus on electronic resources
- *Master of Applied Science (Library and Information Management):* INF425 Describing and Analysing Information Resources (required) - Metadata standards; broader information context; focus on electronic resources; INF411 Organising Information (optional) - Focuses on library practice
- *Master of Education (Teacher Librarianship):* ETL505 Organising Knowledge (required) - Focuses on library practice in the school library environment
- *Master of Applied Science (Teacher Librarianship):* ETL505 (required)
- *Graduate Diploma in Applied Science (Teacher Librarianship):* ETL505 (required)

University of New South Wales, School of Information Systems, Technology and Management, Faculty of Commerce and Economics

- *Graduate Diploma in Information Management:* IMGT5120 Organisation of Knowledge (required) - Knowledge representation, metadata
- *Master of Commerce in Information Management:* IMGT5120 (required)

University of Technology, Sydney, Faculty of Humanities and Social Sciences

- *Bachelor of Arts in Communication (Information Management):* 50491 Organising Information for Access (required) – Both library and metadata practice
- *Graduate Diploma in Information Management:* 57099 Enabling Information Access (required) – Metadata focus; 57090 Information Organisation (required) – Metadata focus
- *Graduate Diploma in Knowledge Management:* 57099 (required)
- *Master of Arts in Information Management:* 57099 (required)

Northern Territory University, Faculty of Law, Business and Arts

- *Bachelor of Library and Information Management:* Professional studies are conducted externally by arrangement with Charles Sturt University: see CSU entry above

Queensland University of Technology [Gardens Point], School of Information Systems

- *Bachelor of Information Technology (Information Systems) Library Studies Stream:* ITB337 Information Organisation (required) – Focuses on library practice
- *Graduate Diploma in Library and Information Studies:*ITN337 Information

---

Queensland University of Technology [Kelvin Grove], School of Cultural and Language Studies in Education

• *Graduate Diploma in Education (Teacher Librarianship):* CLP Bibliographic Organisation (elective) - Focuses on library practice in the school library environment

University of South Australia, School of Communication Information and New Media

• *Bachelor of Arts (Information Studies):* LIBR 1005 Library Automation (required) - Focuses on library practice

• *Graduate Diploma in Information Studies:* LIBR5012 Organisation of Knowledge (required) – Knowledge management, metadata focus; LIBR5023 Knowledge Representation (elective) – Both metadata and library practice

Monash University, School of Information Management and Systems

• *Graduate Diploma of Information Management and Systems:* IMS5017 Information Organisation (required) - Both metadata and library practice

• *Master of Information Management and System:* IMS5017 (required)

Royal Melbourne Institute of Technology, School of Business Information Technology

• Bachelor of Business in Information Management: 1 required subject

• *Graduate Diploma in Information Management:* INF507 Information Organisation in Libraries (required) – library practice

Curtin University of Technology, School of Media and Information

• Bachelor of Arts (Librarianship and Corporate Information Management): IS203 Information Design (required) – Metadata focus; IS204 Information Organisation (required) - Library practice focus

• *Graduate Diploma in Information and Library Studies:* IS503 Information Design (required) – Metadata focus; IS504 Information Organisation (required) - Library practice focus

Edith Cowan University, School of Computer and Information Science

• *Graduate Diploma in Science (Information Services):* IST4106 Information organisation (required) – Library practice.

(Source: http://www.alia.org.au/education/courses/librarianship.html and web sites of the universities, at June 2003)

An analysis of the subjects offered reveals that 18 of the 26 courses require one bibliographic organisation subject to be taken (Table 2). Three courses require two bibliographic subjects. One course required no bibliographic organisation subject to be taken, but offered as an elective, and four courses required one bibliographic organisation subject and also offered one elective (Table 3).

Table 2: Number of Bibliographic Organisation Subjects Offered

Subjects offered	Number of courses (n=26)	Percentage
No required subjects; one elective offered	1	4
One subject required	18	69
One subject required; one elective offered	4	15
Two subjects required	3	12

As indicated earlier in the paper, the content of the subjects offered can be characterised loosely as either closely grounded in traditional library practice, or based in a wider information context. The listing of subjects provided in Table 1 includes a general indication of the nature of the contents of subjects. This must be treated with caution. It is based on the summaries or abstracts of the subjects available on the web sites of the universities that offer them (see Appendix 1). Such summaries are by their very nature brief and not always sufficiently informative to allow a precise categorisation. Nonetheless, even though there is room for doubt, the general trend is clear – subjects that deals with library practice are still the most heavily represented, although subjects that take significant note of the wider information content, especially metadata concepts, are also well represented.

Table 3: Content of Bibliographic Organisation Subjects

Characterisation of content	Number of subjects (n=25)	Percentage
Primarily library practice	12	48
Primarily metadata / wider information context	8	32
Both	3	12
Not clear / insufficient information available	2	8

What should be taught?

We need to ask whether this content is what should be taught in bibliographic organisation subjects. Does it reflect current practice in the workplace?

Certainly the ALCTS/ALISE Task Force report thinks that a widening of content to include metadata should be taught. Explicit throughout it is the term

'cataloging and metadata education' and it provides a useful succinct history of cataloguing education (Hsieh-Lee 2003, p.3-6) which notes the effects of technology, the dynamic nature of digital resources, and challenges from new disciplines.

There is also a strongly expressed point of view that bibliographic organisation practice can play an effective role in knowledge management environments. For example, Henric Beiers notes the connection between the traditional practices of libraries, which create 'structured collections of information', and the newly emerging profession of information architect, which is also 'struggling with the issue of creating structured collections of information in the new electronic media' (Beiers 2001, p. 157).

The move from a focus on traditional bibliographic organisation practice to practice based in a wider information context allows the educator to regain focus on some theoretical issues. These had tended to disappear from bibliographic organisation teaching as it focused on skills-based training, where the emphasis was on how to catalogue in a computer system, instead of on what principles lie behind its design. For example, the thinking of the 1970s about work versus copy is now highly relevant in the online context, as indicated by FRBR (*Functional Requirements for Bibliographic Records*) (IFLA Study Group on the Functional Requirements for Bibliographic Records 1998).

It does not take the observer of library practice in Australia long to realise that the use of online services, the provision of them, and the provision of access to online information resources are now the norm. Even in parts of the library sector where it might be assumed that bibliographic organisation practice is conservative because of the kinds of materials they deal with, such as libraries in schools, the reality is that online resources and digital objects are now thoroughly embedded in practice, so that metadata concepts are required knowledge for practitioners in this sector.

EFFECTS OF DISTANCE EDUCATION ON TEACHING THESE SUBJECTS

The rapid and widespread move to providing courses by distance education is probably the most significant change in education for library and information studies in recent years. Over half of the U.S. schools of library and information studies offered courses in distance education mode in 2001. In Australia, the number is the same: half of the Australian university-based programmes offer distance education courses, but with the difference that at least 50% of recent graduates from Australian library and information studies programmes offered at

university level have studied by distance education. The popularity of distance learning is increasing among workers and students in library and information studies, because of the flexibility it offers to students who may be isolated by circumstances such as distance or family commitments. The widespread adoption of information technology and the Internet for distance education offers many advantages over traditional distance education modes of delivery, which were largely print-based. In particular, the web is 'used as a delivery mechanism for learning materials, supplementing or replacing print material, and as an information resource, providing resource-based learning opportunities' (Harvey and Mills, 2002).

Despite its increasing popularity and effectiveness, the distance education mode presents some difficulties for teaching bibliographic organisation subjects. Two of the practical problems are access to tools, and access to databases.

For the teaching of distance education of bibliographic organisation subjects closely grounded in traditional library practice, access to tools is probably the major issue. Tools such as the multi-volume DDC (Dewey Decimal Classification) and the Library of Congress Subjects Headings are expensive and weighty. It is not realistic to expect students to purchase them, or to expect that the library or teaching department owns large numbers of multiple sets and is willing to mail them out – this is economically impractical for all but the most well-funded schools, of which there are very few. Abridged versions of tools, less expensive (but still a significant cost), have their own problems: for example, if they are not commonly used in practice, should we use them as a teaching tool? (For example, the abridged Dewey is not used in Australia, except in school libraries). Such issues are exacerbated as we move further into 'pure' distance education, that is, where students are physically located anywhere in the world, and where there are no requirements to attend residential schools. It is only in recent years that electronic versions of these tools have become available and affordable.

Access to databases of MARC records (such as OCLC, or Kinetica for Australia) has also posed practical problems for distance education programmes. Access to these has proven to be a major cost in the past, for those databases where it was possible to negotiate access. For example, some vendors were not interested in negotiating a site licence for databases where its users (students) are distributed throughout the world in large numbers, perhaps for intellectual property ownership reasons. Yet is obvious that we need to provide access to some of these databases if we are to teach effectively and provide a realistic experience for our students.

When we consider the teaching in distance mode of bibliographic organisation subjects based in a wider information context, some of these practical issues are less important. The very nature of the 'new practice', based on metadata concepts that originated in the need to control and access digital information resources, means that the tools have been developed online and are readily available online. Dublin Core is a good example (http://dublincore.org); the large number of other metadata standards available on the web is illustrated in a web listing of metadata standards directories (http://www.ulb.ac.be/ceese/ meta/meta.html). Increasingly, too, thesauri are available in online versions. In addition, the new cataloguing and metadata environment is increasingly one where practitioners work online, so it is easier to emulate this in the teaching context.

Other recent developments also assist. For example, databases are increasingly being provided free for education purposes. Vendors have in recent years been much more open to approaches from library and information studies educators, having last realised that there is a correlation between use of their products by students, and the purchase of their products when these students become practitioners. Dialog, for example, is now being available free of charge to library and information studies schools for distance students, where previously it was limited to student use in a laboratory situation). More specifically, in the teaching of bibliographic organisation subjects Charles Sturt University is negotiating an agreement that WebDewey will be available to distance students at Charles Sturt University without charge, and in 2003 the National Library of Australia offered access to some of the databases on Kinetica, its suite of MARC record databases, free of charge to Australian library and information studies schools.

CONCLUSION

The ALCTS/ALISE Task Force proposed that three levels of expertise in cataloging and metadata were needed: 'expertise for all LIS graduates, expertise for metadata cataloguers, and expertise for leaders of cataloging and metadata projects' (Hsieh-Yee 2003, p. III). This study indicates that no Australian school comes close to offering this. But some of the conditions may be in place for this to occur, such as the recent removing of some of the financial constraints necessitated by subscribing to databases and purchasing tools. However, we are still left with the situation where bibliographic organisation subjects have been de-emphasised in library and information studies programmes. There is a need to convince the profession at large, and also many of our colleagues who teach side by side with us, that such subjects must be given greater prominence because

they are essential for the effective operation of libraries and information centre, especially in the digital environments in which we are now firmly positioned.

Although this paper has used examples from Australian and U.S. practice, its comments and conclusions are likely to also be relevant to library and information studies education in Asia. There is no escaping the fact that library practice and library and information studies education is heavily influenced by U.S. models.

REFERENCES

Australian Library and Information Association. 2003. *The library and information sector: core knowledge, skills and attributes.* http://www.alia.org.au/policies/core.knowledge.html

Beiers, Henric. 2001. Information architecture: information organisation in a dot.com world, In: *Seachange: cataloguing in a dot com world: 14th National Cataloguing Conference preprints.* Geelong, Vic.: Organising Committee of the 14th National Cataloguing Conference:157-163.

Harvey, Ross. 1999. *Organising knowledge in Australia.* Wagga Wagga, NSW: Centre for Information Studies.

Harvey, Ross and Susan Higgins. 2003. Defining fundamentals and meeting expectations: Trends in LIS education in Australia. *Education for Information,* Vol.21 (forthcoming).

Harvey, Ross and John Mills. 2002. E-learning in the LIS curriculum: can it stand alone? Paper presented at the Library and Information Science Education in Asia (LISEA) Post ICADL Workshop, 14 December 2002, Singapore.

Hsieh-Yee, Ingrid. 2003. *Cataloging and metadata education: a proposal for preparing cataloging professionals of the 21st century.* Web version. http://www.loc.gov/catdir/bibcontrol/CatalogingandMetadataEducation.pdf

IFLA Study Group on the Functional Requirements for Bibliographic Records. 1998. *Functional requirements for bibliographic records: final report.* München: K.G.Saur. (Also available online: http://www.ifla.org/ VII/s13/frbr/frbr.htm)

Thomas, Sarah E. 2000. *The catalog as portal to the internet.* http://lcweb.loc.gov/catdir/bibcontrol/thomas_paper.html

Selected Abstracts of Bibliographic Organisation Subjects
(Source: web sites of the universities, as accessed in June 2003)

University of Canberra
005821 Information Organisation
Syllabus: This subject examines the relevant theories and practical issues involved in the organisation of information. These include principles and practice of indexing and cataloguing as well as thesaurus development, subject analysis and authority control.
Learning Outcomes: Students should: develop the ability to analyse and demonstrate the relationship between information concepts, understand and be able to apply industry standards for classification, cataloguing, index and thesaurus construction, and develop skills of critical evaluation through examining and discussing some of the wider relevant topical issues.

Charles Sturt University
ETL505 Organising Knowledge
This subject focuses on the organisation of information in the school library environment. The importance of providing and enhancing access in supporting and encouraging effective use of information, the impact of information technology and the role of SCIS cataloguing services are emphasised.

INF411 Organising Information
This subject introduces students to the ways in which we provide access to documents, whether they are in print, audiovisual or electronic format. In particular, it examines the creation of records (surrogates) to identify and describe documents and the use of classification schemes, artificial indexing languages etc, to provide users of information resources with a subject approach to information retrieval. Students are given the opportunity to learn basic principles of organisation and retrieval, which will serve them in a variety of information-related environments. They are expected to demonstrate a practical understanding of cataloguing, classification and indexing through use of bibliographic tools such as AACR2 and DDC.

INF425 Describing and Analyzing Information Resources
This subject introduces students to the principles and practices of describing and analysing information resources in library and related information contexts. It uses metadata standards to illustrate the basic principles which underlie effective information organisation practice. Examples are drawn from a range of information environments, including but not limited to libraries, and from a variety of information carriers. The organisation of electronic resources is particularly noted.

University of Technology, Sydney
50491 Organising Information for Access
This subject explores the interrelationship between processes and principles of information organisation, retrieval and information seeking behaviours in networked information environments. Students learn to apply client-centred approaches to information organisation and develop improved client access to electronic and print

resources. Some of the topics covered by the subject include database structures, indexing, metadata, classifying, and mediating relationships. These principles are put into practice in specific client contexts in the workshops and assessable tasks including database development.

57090 Information Organisation
Building on the expertise developed in 57099 Enabling Information Access, this subject further explores the interrelationship between processes and principles of information / knowledge organisation and information access. Students learn advanced skills of information organisation and apply them to the design and development of a database created in response to particular client requirements. The subject covers topics such as: database structures, content analysis, indexing, abstracting, classifying, content management, architecture and metadata creation. The major project involves database creation and usability testing. Students also explore the nature of collaborative information retrieval and its implications for organising and accessing content.

57099 Enabling Information Access
This subject explores the nature, functions and characteristics of a range of resources and collections in diverse settings. It examines the interrelationship between processes and principles of information / knowledge organisation, selection and retrieval practices and information seeking behaviours. Students develop an understanding of the theory and practice of information organisation, information retrieval and collection management in networked information environments. Students learn to apply client-centred approaches to information organisation and develop specialised search strategies that enable them to improve client access to electronic and print resources. The subject covers topics such as: content analysis, indexing, classifying, Boolean logic, thesauri tools, keyword searching, metadata and mediating relationships. Information retrieval interactions (including interpreting the needs of information seekers, negotiating, question analysis, searching and evaluating retrieval effectiveness) are also examined. These principles are put into practice in specific client contexts in the workshops and assessable tasks.

University of South Australia
LIBR 1005 Library Automation
Features of library automated systems; data analysis: fields, records and files structure; encode and input bibliographic data in an automated system; course analysis: principles and practice in indexing and classification; bibliographic utilities; online public access catalogues; catalogue users studies.

LIBR 5012 Organisation of Knowledge
Theoretical foundations of bibliographic organisation; epistemologies, knowledge structures, ontologies and taxonomies, information mapping and information architecture; basic principles and theoretical foundations of traditional organisation schemes, including materials from traditional librarianship, information science, cognitive science, semiotics, and artificial intelligence that have contributed to an understanding of how people obtain, store, retrieve and use information; study of principles organising various types of documents; representation and organisation of information resources, including organisational structures such as classification schemes,

indexes, bibliographies and catalogues which provide access to the document and its intellectual content; national and international standards of bibliographic control; various approaches to organising in different environments; the role of technical standards.

LIBR5023 Knowledge Representation
Indexing and information retrieval theory; knowledge representation, linguistics, indexing and coding; epistemologies, ontologies, taxonomies, thesaurus construction; analysis of indexing and retrieval systems; manual and computer indexing and abstracting; thesaurus design, construction and use.

Monash University
IMS5017 Information Organisation
Synopsis: Standards governing description, distribution and access to information at the local and global levels with respect to AACR2, subject headings lists, indexing and thesaurus construction, classification schemes, the MARC and the Dublin Core metadata. The effects of economic, social and technological factors on the developments of bibliographic networks and cataloguing operations. Major bibliographic tools and utilities for organising bibliographic records on a bibliographic network.

Royal Melbourne Institute of Technology
INF507 Information Organisation in Libraries
This course will enable students to develop their understanding of the organisation of information resources through their description and subject analysis. As well as exploring broad approaches to information organisation, students will begin to practise skills in resource description and subject analysis, further developed in the courses Document Management and Information Provision. The course will also provide an understanding of the environment in which students will undertake field-based learning. This course focuses on the physical and intellectual description and organisation of published resources. It develops students' understanding and skills in the areas of formal resource description and the tools and systems used in determining the subject content of different resources.

Curtin University of Technology
IS503 Information Design
The basic principles involved in structuring information objects and creating the metadata which makes them retrievable. Topics may include - information structures, hypertext, markup languages, databases, automatic and derived indexing, metadata and description, DTDs and schemas, indexing languages, standards and standards organisations, categorisation and subject analysis, evaluation of retrieval effectiveness. Practical workshops introduce students to international standards for information organisation.

IS514 Information Organisation
Application of the general principles learnt in Information Studies 503 - Information Design to the retrieval of the resources of libraries and information centres. Provides the opportunity to develop skills in the use of library cataloguing codes and classification schemes and in the construction of specialist subject retrieval systems.