



**scis**

SCHOOLS CATALOGUE INFORMATION SERVICE

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# connections

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## The Great Divide? Physical and Digital Resources in School Libraries

***School libraries face an increasing challenge to meet the needs of their users for integrated access to all resources – physical and digital. This is not just an Australian or school-sector issue. Worldwide there is increasing use of the concept of 'hybrid libraries' to describe the integration of access to physical and digital resources. Several recent developments have encapsulated the importance of dealing with this issue.***

At SCIS we are grappling with the issue of school libraries' need to include Internet resources in their library catalogue. In addition, Curriculum Corporation and Education.au (which manages EdNA Online) have identified as an issue the need for schools to be able to search easily both catalogues of physical resources (the traditional library catalogue) and directories of Internet resources such as EdNA Online.

The Victorian Association of Library Automation (VALA) 2000 Conference held in February had as its theme 'Books and bytes: technologies for the hybrid library'. Several conference speakers highlighted the issues involved in hybrid libraries.

Chris Rusbridge, a senior UK information specialist, said:

*... many 'digital library' projects ... were expressed in terms quite independent from real library environments. ... Even for existing or legacy digital materials [CD-ROMs] the interfaces which are offered are extremely varied, not to say idiosyncratic ... The result is a hodgepodge of different approaches which the would-be user of information must navigate.*

Warwick Cathro from the National Library of Australia (NLA) quoted a report that claims there is 'a very strong continuity between traditional library roles and missions and the objectives of digital library systems'. He gives as an example work undertaken by the NLA to resolve integration issues 'to redefine itself in an emerging digital world'. The development of the NLA Integrated Research and Information Services (IRIS) is based on a model whereby integrated access to all resources (physical and digital) should be available through a common entry point, which should be the library catalogue: 'A true hybrid library service needs to break down the distinction between "Our Catalogue" and "Electronic Resources" ... electronic resources should appear in result sets when a user does a subject search of the library's catalogue'.

But just to show that solutions are not easy, Geoffrey Payne of Vision Australia Foundation, Victoria, raised questions about the very future

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# CC News

## 1. SCIS Authority Files subscription 2000

Curriculum Corporation has released a new version of the previous product *SCIS Subject Headings Disk*. Please note that this product has been renamed and is now known as *SCIS Authority Files*. Order forms for this new product were sent to all schools recently. However, if you did not receive an order form for your library you will find a copy on our website at <<http://www.curriculum.edu.au/scis/scisaf.htm>>, or alternatively you may contact SCIS to arrange for a form to be forwarded to you.

The *SCIS Authority Files* contains the entire contents of the SCIS database subject authority file and complements SCIS bibliographic records and the *SCIS Subject Headings Fourth Edition*. Used within the school's library system, the file can quickly enhance subject access to the school's resources by creating references. We plan to include name authority files next year.

Check our website at <<http://www.curriculum.edu.au/scis/scisaf.htm>> for full product details, licence agreement, functional description and order forms. Schools are reminded that before using the product they must read the licence agreement. We advise customers to check compatibility with their library software system before ordering the product.

## 2. SCISWeb usage

SCIS is able to generate a number of reports from SCISWeb and the Voyager system. One of these reports indicates that over the last few months there have been almost 1,000 individual users accessing SCISWeb every day. This is good news for us as obviously many schools are taking full advantage of their subscription to SCISWeb to download catalogue records by regularly using the product. We would expect this number of individual users to increase in the future as more schools subscribe and also as SCISCD customers change over to SCISWeb.

## 3. SCISCD

The SCISCD product will be available again in 2001. However, we would like to remind customers who subscribe to SCISCD that you have the option at any stage throughout the year to convert from SCISCD to SCISWeb by notifying SCIS. No further payment will be required. However, before subscribing please

give consideration to the extra benefits that are available when using SCISWeb:

- being online to the live SCIS database of approximately 670,000 bibliographic records, SCISWeb customers have immediate access to new records
- the ability to download bibliographic records of resources as soon as they are added to the SCIS database
- faster downloading of records
- more searching options in the Voyager SCIS OPAC
- the ability to print up bibliographies as an aid to selection of resources
- the ability to view the subject headings with *see* and *see also* references
- no waiting for the next updated edition of SCISCD to be delivered
- no installation procedures required.

## 4. What's New

We remind customers to check the *What's New* menu option regularly as we update this page with links to the latest information posted to the SCIS website. Updated information includes SCISWeb handy hints, SCIS product demonstrations, new SCIS products, library conferences and seminars and links to relevant websites for library staff. Contributions are encouraged as we would like to provide comprehensive information on our website that is beneficial to all school libraries.

## 5. Subscriptions 2001

Due to requests from library staff we are making arrangements for SCIS subscriptions for the year 2001 to become available earlier than in previous years. As information becomes available in July we will advise schools on our website at <<http://www.curriculum.edu.au/scis/subscrib.htm>>.

Curriculum Corporation is pleased to announce that there will be no increase in the recommended retail price in 2001 for SCISWeb and SCISCD, although prices will be adjusted to include GST. However, GST does not apply to our customers outside Australia.

Customers will be able to commence using SCISWeb in 2001 on Monday 15 January. You will be able to use the same password in the year 2001 as for 2000, but the counter for records downloaded will be reset to zero.

Contact SCIS to have password reset if necessary (only if misplaced or unknown).

Email: [scisinfo@curriculum.edu.au](mailto:scisinfo@curriculum.edu.au),  
Fax: +61 3 9639 1616, Tel: +61 3 9207 9600  
or 1800 337 405 (within Australia free call  
outside Melbourne metropolitan area).

Customers subscribing to SCISCD will receive the first edition for 2001 by 9 February 2001. We would also like to advise customers that we have extended the expiry date for Edition 5 to accommodate the January holiday period. Edition 5, 2000 will expire on 9 February 2001 to coincide with the delivery of the first edition in 2001.

Schools should read the information listed in the SCIS subscription category below which outlines the arrangements for 2001:

- Education department bulk deal arrangement
- National Catholic bulk deal arrangement
- Independent schools bulk deal arrangement
- Christian parent-controlled schools bulk deal arrangement
- New Zealand schools with EdCom membership
- Current subscribers to SCIS not involved in the above arrangements
- Non-subscribers who do not belong to any of the above arrangements.

At this stage we have not finalised arrangements for subscriptions for 2001 with all of the relevant organisations. As further information about subscriptions becomes available we will place an announcement on our website at <<http://www.curriculum.edu.au/scis/subscrib.htm>>.

- a) Education department bulk deal arrangement: the current arrangements will continue for the year 2001 for schools in New South Wales, Western Australia and Northern Territory. Negotiations are underway with education departments in Queensland and South Australia to continue a whole-of-state subscription to SCISWeb and/or SCISCD for all schools for the year 2001. When arrangements have been finalised we will advise schools on our website at <<http://www.curriculum.edu.au/scis/subscrib.htm>>.
- b) National Catholic bulk deal arrangement: the National Catholic Education Commission will negotiate another bulk deal arrangement



# SCISWeb Handy Hints

## 1. Low hit rates

To avoid problems with low hit rates we recommend that customers use a barcode scanner to ensure accuracy when inserting data. However, if you are typing ISBNs or SCIS record numbers into the *Create Orders* box or into a text file you must always press the return key immediately after each number. When an order is processed SCISWeb could recognise a space as a digit so will be unable to match that particular number. If, after viewing the results of an order, there appears to be a large number of unmatched records, we recommend that you check your order file. By clicking on the *Order* link in the column *Order File* in the *Your Data* table, you will see the list of numbers in your order. Highlighting the list of numbers will allow you to check that no additional spaces have been placed after any of the ISBNs or SCIS record numbers. If you find any spaces after the numbers delete them then reprocess your order.

## 2. Difficulty logging onto SCISWeb using Bookmarks or Favorites

Sometimes customers may experience difficulty logging onto SCISWeb when they try to use *Bookmarks* or *Favorites*. To overcome

this difficulty we advise customers to delete the SCISWeb bookmark from *Bookmarks* or *Favorites* in their browser files. After this deletion has been completed you may then wish to reinsert the URL <http://www.curriculum.edu.au/scis/webmsg.htm> in your *Bookmarks* or *Favorites* to ensure quick access for future sessions of SCISWeb.

To remove a Bookmark in the Netscape Communicator 4.07 browser, click on the *Bookmarks* button on the browser. Choose the *Edit Bookmarks* option. Highlight the bookmark you wish to delete. From the top menu bar choose the *Edit* option and select *Delete* from the pull-down menu. From the *File* option click on *Close* to finish the process.

To remove a Favorite in the Internet Explorer 5 browser select *Favorites* on the top menu bar. Choose *Organize Favorites*. Highlight the Favorite you wish to remove and click on the *Delete* button. Click on the *Close* button.

The above steps may vary slightly if using different versions of the browsers.

## 3. Message of the Day

*Message of the Day* button in SCISWeb is linked to *What's New* on the SCIS main menu. It is important to visit this page frequently to ensure that you are alerted to the latest information that has been added to the SCIS Website. This includes information about SCISWeb handy hints, SCIS product demonstrations, new SCIS products, library conferences and seminars and links to relevant websites for Teacher Librarians. We are always keen to receive notification about relevant information that can be included for the benefit of all staff in school libraries.

## 4. Quick link

When 'surfing' the SCIS site, remember to use the **SCIS** or **'i'** logos found at the top of most pages. These are links back to the SCIS main menu options.

## CC News (cont.)

- for Catholic schools. Further details are at <http://www.curriculum.edu.au/scis/subscrib.htm>.
- c) Independent schools bulk deal arrangement: in 2000 there was a discounted price available for schools in Queensland, Victoria, Western Australia and Australian Capital Territory. Further details for 2001 are at <http://www.curriculum.edu.au/scis/subscrib.htm>.
  - d) Christian parent-controlled schools bulk deal arrangement: the Association for Christian Parent-Controlled Schools arranged a discounted price for their schools in 2000. Further details for 2001 are at <http://www.curriculum.edu.au/scis/subscrib.htm>.
  - e) New Zealand schools with EdCom membership: when subscribing to SCIS please include your EdCom membership number to ensure you receive a 20 per cent discount from the RRP. Payment in Australian dollars.
  - f) Current subscribers to SCIS not involved in the above arrangements: your subscription to SCIS in 2000 was a standing order, which means that you will not be required to subscribe again. You will automatically be given access to the same product in the year 2001 that you subscribed to in 2000. An invoice will be sent to you in September requesting payment for the year 2001 and asking for confirmation of product required.
  - g) Non-subscribers who do not belong to any of the above arrangements: schools that do not have a subscription for 2000 will be sent 2001 SCIS subscription form in September. If an order is placed before the end of 2000 the school will have access to the products at the beginning of the year. If subscribing to SCISWeb a letter will be delivered to the school by 15 January 2001 outlining passwords and how to access the product. Customers whose subscriptions to SCISWeb are received at Curriculum Corporation after 1 January 2001 will receive instructions (including new default password) and access to SCISWeb within five to ten working days upon receipt of subscription form.



# SLANZA!

## School Library Association of New Zealand Aotearoa

SLANZA! A vision of an eastern European football team? A toast to be followed by glasses dashed into the fireplace? Well, neither of those, but certainly a reason for celebration. And celebrate we did! About 150 people from a wide range of organisations gathered at the National Library in Wellington on 12 May for the launch of the School Library Association of New Zealand Aotearoa.

As Christopher Blake, chief executive of the National Library of New Zealand, said in his speech, the idea is not new, but 'It's high time school libraries were represented by a unified national body'.

Jill Stotter, president of the Auckland School Library Association and first president of SLANZA, revealed that enjoyment of a cheeky Australian chardonnay in Geelong had been the catalyst for action. Optimistically, a group of like-minded professionals set out to create this new organisation centred on school libraries and their staff. The road was not easy, as representational, financial and organisational issues all had to be addressed. In her speech, Jill Stotter challenged everyone present to work on ways of increasing Maori, Pacific Island and male representation in the organisation at regional and national levels. The aim is 'to make SLANZA truly inclusive and representative of our national school library community.'

Jill said 'A major purpose for SLANZA will be to give school libraries a profile and a voice, not only within their own school community, but out into the wider community'. This is reflected in the vision 'to strengthen and promote the role of school libraries to enable all school communities to become information literate'. She pointed out that all the Essential Learning areas of the National Curriculum have their subject associations, but that the Essential Skills underpinning these have not, until now, been as well supported. SLANZA is taking the professional role of providing informed comment to ensure Essential Skills (which actually add up to information literacy) are 'being taught within genuine learning contexts right up the learning spiral and across all areas of the curriculum.'

Of course, an undertaking as broad as creation of a nationwide organisation cannot be

achieved without support. Jill Stotter acknowledged the extensive support provided by the National Library of New Zealand, Auckland College of Education, Library and Information Association of New Zealand Aotearoa and the abundant energies of those on the steering committee of SLANZA.

That level of support is clearly set to continue. In his speech, Christopher Blake noted that the National Library has information literacy as a major factor in its strategic development and that it has been providing advice and curriculum information services direct to schools for decades. The National Library is in a strong position to work in partnership with SLANZA in a variety of ways. (Indeed, the National Library made this support very public by hosting the launch and a full-day seminar by Dr Gary Hartzell.)

Christopher Blake commented too on the fact that in New Zealand 'most school libraries are staffed by teachers part-time, with support staff at varying levels of training to assist them'. Despite this history of school library staffing, he said we had made progress in a number of ways. For example, 'it is significant and encouraging that many classroom teachers are participating in various information skills courses and some schools have created specialist positions in recognition of the growing and critical consequence of the school library to student learning'.

The SLANZA launch would not have been complete without the presence of the Minister for the National Library, the Honourable Marian Hobbs, whose opening speech, delivered with considerable passion, was met with a standing ovation.

Marian Hobbs celebrated the effort of all those involved in creating SLANZA, naming organisations and individuals whose work would otherwise be hidden. She said that '[The launch] of this association marks a recognition that school libraries are uniquely important in New Zealand's information infrastructure, and important to our capacity as a nation to learn and grow'.

She went on 'SLANZA is under no illusions about the job that is ahead of it. Whatever the reasons, it is clear that the special needs of school libraries have not always been provided for, and the special opportunities that school

libraries offer have not always been taken full advantage of. ... One area where it is becoming absolutely critical that these opportunities are taken advantage of is in the field of information literacy. There is a growing recognition that the capacity to access, critically evaluate, and effectively use information from a variety of sources is a critical skill for all members of society, and that the school library has an important role in ensuring that young New Zealanders have this ability.'

Ms Hobbs highlighted the need for SLANZA, and the library community, to work on multiple fronts beyond the confines of their respective professional arenas, for example within the teaching profession and education sector. She sounded a warning that where skills and tools are lacking, new information technologies are likely to be divisive: 'The digital divide is real and getting deeper ... There is clearly another opportunity here for school libraries and for SLANZA'.

Her speech ended with a strong call for a collaborative approach to the challenges ahead. 'In this environment, libraries and school libraries, cannot be passive bystanders. They need to seek and gain influence. They must build partnerships.'

This need for collaboration and influence building was taken up by Dr Gary Hartzell both during his speech and his seminar the following day. On a lighter note, he reminded us of two meanings of the word 'celebration': the social expression of joy and the solemnising of events. How apt! The SLANZA launch was grounds for optimism and joy, but it also raised the profile of those who work in school libraries and the issues they face in a formal manner. No longer are school libraries in New Zealand represented by an anonymous, amorphous spread of people working diligently in the background. Now they are identifiable, have a common vision and a voice that can make a difference in education. SLANZA may be a young organisation, but it has great future.

Contact SLANZA at Email:  
<Slanza@staff.pakuranga.school.nz>.

*This article has been written by Penny Moore PhD, who is an educational researcher in Wellington, New Zealand.*



# What Do Teacher Librarians Need to Know about Cataloguing?

***Ashley Freeman reflects on the role of the Teacher Librarian with respect to cataloguing. With the availability of centralised services such as SCIS, do Teacher Librarians need to know how to catalogue?***

The recent publication of the fourth edition of *SCIS Subject Headings* as a tool for use by both cataloguers in SCIS cataloguing agencies and Teacher Librarians in schools makes this an appropriate time to reflect upon the role of the Teacher Librarian with respect to cataloguing.

## ***The roles of a Teacher Librarian***

The roles of a Teacher Librarian are diverse. Foremost a Teacher Librarian is a specialist teacher with responsibilities such as the development of students' information literacy, cooperative planning and teaching with fellow teachers, advocating resource-based learning, collaborating in curriculum development including literacy, and promoting a love and appreciation of literature. Because of the constantly expanding use of information and communication technologies in school libraries, many Teacher Librarians have also gained technical and educational responsibilities in this field within their school. Additionally the Teacher Librarian is a librarian with the full range of duties involved in managing and developing a library. Being a Teacher Librarian is a demanding multifaceted profession.

Add to this some realities of Teacher Librarianship. The majority of school libraries have only one Teacher Librarian with limited paraprofessional or clerical assistance. Most primary school Teacher Librarian positions are part-time appointments. While increasingly Teacher Librarians hold postgraduate qualifications in their specialist field, there are some practitioners with minimal library qualifications. In this context the Teacher Librarian as cataloguer starts to appear a rather restricted role! It is important to note that not all school libraries fit into the foregoing snapshot. There are school libraries that have a number of professional and support staff. At the other end of the spectrum there are school libraries in which professional and support staff time is less than a day a week.

## ***Cataloguing services for schools***

Fortunately school libraries are generally no longer dependent on the skill of the Teacher Librarian as a cataloguer for the creation of most records within their OPACs. Centralised and/or cooperative cataloguing is as much a reality for school libraries as it is in the broader library community. The majority, over 80 per cent of school libraries in Australia, use the Schools Catalogue Information Service (SCIS) as their chief source of cataloguing information. SCIS cataloguers work to standards specifically designed for Australian school libraries. SCIS has a database of over 670,000 catalogue records, with approximately 3,500 records being added each month. It provides for the online retrieval of catalogue records via SCISWeb and SCISCD and provides the means to download a reference structure for the SCIS subject headings used in a school's OPAC. With the provision of such services, and the many demands upon their time, do Teacher Librarians need to know how to catalogue?

## ***A need for knowledge of cataloguing?***

There are those who would argue that Teacher Librarians do not need to know how to catalogue. They argue that the provision of centralised services has reduced the provision of the library catalogue to a routine process able to be undertaken by a paraprofessional under the supervision of the Teacher Librarian, thus freeing the Teacher Librarian to focus on other tasks. I believe such an argument to be erroneous. Certainly the Teacher Librarian has been largely relieved of the task of creating catalogue records and a reference structure for the OPAC. Assuredly this should mean more time to devote to other tasks. However, it does not mean that the Teacher Librarian has no role to play in this area and hence no need to know about cataloguing. Downloading catalogue records and a reference structure, while major aspects of providing a catalogue, do not in themselves create an efficient and effective catalogue. The input of a knowledgeable Teacher Librarian remains a key factor.

The forms this professional input takes are various. The selection of an appropriate cataloguing service and library OPAC is a professional role requiring considerable cataloguing knowledge. It needs to be noted, though, that some educational authorities do

largely make such decisions for their schools. The intelligent use of these products to ensure their potential is exploited, however, remains very much the responsibility of the individual and informed Teacher Librarian. Take the simple case of the downloading of SCIS cross-references into a school library's OPAC. If the Teacher Librarian is unsure of the role of cross-references and does not understand the concept of a reference structure, then the possibility that this service will be implemented is small. Additionally, some Teacher Librarians, unfamiliar with cataloguing, add a variety of broad, and often non-allowed, words and phrases as subject headings to unconsciously compensate for this lack of a cross-reference structure. They thus use their time in an unnecessary and unproductive way, as well as unwittingly turning their subject authority files into a morass.

Most OPACs provide for the keywording of records. In some instances this is an automatic operation, in others some manual tagging of keywords is required. Again, unless Teacher Librarians understand the concepts of controlled and natural language and how they relate to the retrieval of information, they are not in a position to develop and exploit the various elements of subject access effectively. Regrettably this situation exists in many school libraries. Additionally, library software developers have created, and continue to create, enhancements for OPACs including the ability to go directly to an Internet resource from its record on the catalogue and the ability to scan text and pictures into OPAC records. The potential value of such facilities again requires cataloguing knowledge if they are to be logically and positively exploited in a timely and efficient manner.

There continue to be instances where a catalogue record for a particular item, or catalogue records for a particular type of resource, are not supplied by the cataloguing agency. Clearly the Teacher Librarian needs to have the cataloguing knowledge needed to create catalogue records for such items. SCIS has been very proactive in moving to reduce this need by providing processes for identifying, and creating records for, items that have initially been missed, and trialling the selective cataloguing of Internet sites.



## What Do Teacher Librarians Need to Know about Cataloguing? (cont.)

Currently, however, there remains some need for original cataloguing skills on the part of Teacher Librarians.

The modification of catalogue records to meet local needs is a further, though contentious, area where cataloguing knowledge on the part of Teacher Librarians is required if such changes are to be made in a professional manner. Many would question the need for such changes, particularly to SCIS records, which are created specifically for Australian school libraries. A key argument is that the time and effort taken could have been better expended elsewhere. This is generally true and it is my belief that the more knowledgeable a Teacher Librarian is of cataloguing, the more aware they will be of why records take the form they do and consequently will be less tempted to make changes to them. However some changes, such as the addition of location devices and the adding of a specific keyword relating to a local curriculum topic, do have value as they save the Teacher Librarian time. The time expended in making the changes is

more than compensated for by the time saved in not having to repeatedly provide information that now exists on catalogue records. Obviously cataloguing knowledge is necessary to be able to make such judgements.

Teacher Librarians with cataloguing knowledge are also in a position to provide informative feedback to their cataloguing agency on changes and additions that they would like to see made to catalogue records and why such changes and additions would be beneficial. SCIS encourages this process, and many of the changes that have occurred to SCIS records have been user driven. Further, Teacher Librarians who understand cataloguing are in a far better position to teach users how to use the OPAC effectively and to set in place strategies to overcome difficulties that users encounter.

### Conclusion

While Teacher Librarians have been relieved of much work involved by centralised cataloguing, they still need skills and knowledge in cataloguing if the catalogue is

to be properly developed and maintained. To a significant degree the Teacher Librarian's informed and considered input, or lack of it, still determines if the catalogue is used and appreciated by users, or if the most noticeable feature of the catalogue is the number of users who bypass it.

### References

- SCIS *Subject Headings Fourth Edition* 1999, Curriculum Corporation, Carlton South, Vic.
- Gove, K 1999, 'SCIS: assisting schools to manage knowledge' *Bytes, Books and Bollards by the Bay: Proceedings of the 16th Biennial Conference of the Australian School Library Association*, pp 151–155, ASLA, Richmond, Vic.
- SCIS website: <<http://www.curriculum.edu.au/scis/index.htm>>.

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## The Great Divide? Physical and Digital Resources in School Libraries (cont.)

of traditional library catalogues. Are MARC records just another document type? How can libraries be reinvented to build on what is useful while adding value in response to the opportunities in a digital world? Will availability of richer electronic descriptions of physical resources (such as tables of contents) alter how we conceive of the cataloguing process?

The need is clear: seamless access to resources of any kind. The solution is much less clear. Australian school libraries are fortunate to have access to an abundance of services that provide indexed descriptions of educational websites. EdNA Online is the primary Internet directory and website indexing and abstracting service for Australian education and training; State and Territory education departments also provide similar services, as do a plethora of commercial providers. With respect to catalogue records for physical and digital resources in their collections, schools have access to SCIS, which

has provided catalogue records to school libraries for over a decade. SCIS is currently evaluating its trial of including catalogue records for educational websites in its database.

School libraries have limited resources to invest in library automation or information management systems. One possible technical solution for simultaneous access to several MARC-based catalogues of repositories of resources is the Z39.50 interoperability protocol (see <<http://lcweb.loc.gov/z3950/agency/>> for an explanation), but very few school library automation systems currently have that capacity.

Reflecting these challenges, there is a range of strategies used by Teacher Librarians to manage physical and digital resources: some create catalogue records for Internet sites; others encourage users to search EdNA or State and Territory education department directories separately; others create 'controlled'

bookmark files within the library automation system or on the school's network; others are developing more or less sophisticated Intranets and/or customised portals or computer front-ends with varying degrees of search capacity; and yet other strategies may well be used.

Recognising the importance of providing seamless access to all resources, and the difficulties of doing so in school libraries as outlined above, Curriculum Corporation and Education.au will undertake joint research into strategies for schools to manage educational resources in their hybrid formats.

The VALA 2000 conference proceedings are available on their website at <<http://www.vala.org.au/vala2000/2000pprs/prog2000.htm>>, and provide useful ideas on developments in this area.

*Keith Gove, Manager, Information Services, Curriculum Corporation.*



# Internet Resource Management – The Role and Development of Metadata

***This article is the final in our series on metadata. Kylie Hassan's straightforward approach will be of particular interest to library staff who want a concise explanation of metadata's relevance to their library and their users. This essential background reading raises many important issues for discussion and you may wish to pass the article on to other staff in your school, particularly if you are currently setting up websites and intranets.***

Since the early 1990s the number of searchable files available via the Internet has exploded at almost unimaginable rates, resulting in millions of websites and literally billions of web pages. The ease with which we can electronically publish a document and make it universally available is astounding.

Therefore one of the fundamental questions of this information age is: how *do* people find – and how do we as information professionals *ensure* – that people find the information they are seeking in this global environment?

## **Definitions**

So, what is metadata? Throughout the literature, 'metadata' is essentially defined as data about data. Any data associated with, but distinguished from, an information object can be called metadata. Milstead & Feldman (1999) provide a useful definition in stating that metadata acts as a surrogate for a larger whole, highlighting those characteristics of a work that enable the user to understand its contents as well as its purpose, source and conditions for use. Many aspects of metadata are already familiar to us. One of the most obvious examples is the library catalogue. The characteristics of items listed in a library catalogue such as title, author and subject are all pieces of metadata that can be used to find books and retrieve them from library shelves.

In relation to the WWW, metadata refers to a set of attributes used to facilitate the identification, description and location of Internet-based resources. Metadata allows us to capture information about each web page and relate what a resource is, what it is about and where it can be found. As Ng (1996) imparts, metadata can provide information about the whole resource or only parts of it,

and supports the effective use of information from creation through long term use. By using metadata to provide simple and consistent descriptions of Internet resources, we will continue to be able to find, understand and maintain access to web-based information.

Although metadata is most commonly associated with web-based resources, the concept itself is not new. The term 'metadata' was coined by Jack Myers in 1960 to describe datasets effectively, and first began to appear in the literature in the early 1980s in relation to database management systems.

## **Problems with the Internet**

With regard to the WWW, there are many current problems that the use of metadata may provide solutions for. Perhaps the most important problem as mentioned above, is the huge growth in information published on the Internet. The sheer number and variety of resources often threaten to overwhelm the user.

Iannella & Waugh (1997, online) remark that the ability to find and retrieve relevant material has decreased as the quantity of information on the WWW has risen. Some information has become so difficult to locate it is effectively unavailable. A simple method is needed to retrieve and provide access to resources that are of interest to a particular user.

Searching the Internet has traditionally been accomplished using tools such as web crawlers. These software robots roam the WWW collecting millions of hypertext document links. The information from each HTML (hypertext markup language) web page is automatically formatted into full text keyword databases. These databases of harvested links can be queried using search engines. A search engine is an interactive interface that allows the user to find information by matching query terms to words stored in the database. If the terms do not match, the document will not be retrieved regardless of how relevant it is to the subject of the enquiry.

However, as the Internet has grown, this type of searching has proven less and less effective. Search engines frequently produce extensive lists of results, of which few hits correspond to what the query was intended to find. This causes frustration, as the user is required to spend time examining a large number of

irrelevant citations to find the few applicable documents.

In response to these problems, the W3C (World Wide Web Consortium) (1999) remarks that a significant part of the web is missing. It lacks the type of labels, cataloguing data or descriptive information that would allow web pages to be properly searched and processed by a computer. Also absent are features such as standard vocabularies and authority control mechanisms that make traditional bibliographic tools useful. In addition, search engines have no way of indexing non-textual multimedia objects such as the image, audio, video and executable program files that populate the web.

As a result, it must be said that one of the primary reasons for developing metadata is to facilitate and improve information retrieval. It is important to help to close the gap between user expectations of the Internet and the current reality of searching. According to Efthimiadis & Carlyle (1997), metadata can enhance the probability that a resource will be retrieved, allow users to discriminate amongst similar resources, and preserve the intellectual content of resources over time. Metadata will also improve the recall and precision of searching through using the same standardised term for every occurrence of a subject. If metadata is properly applied, a document could be retrieved even if it never uses the controlled term within its text.

## **Metadata elements**

Iannella & Waugh (1997, online) relate that the basic model for metadata is known as an attribute type and value model. Each fact about a resource is known as an attribute or element. An element contains a 'type' that identifies the information that element should contain, and also one or more 'values' which is the metadata itself. For example, if we were going to add metadata to a document called 'My Skiing Trip', the element type in this case would be 'title', and the 'value' would be 'My Skiing Trip'.

Throughout the literature there appear to be three major groupings of elements. Marsh (1997) defines these as elements relating to the content of a resource, elements relating to the intellectual property of a resource, and elements that describe the instantiation of resources. Content elements relate to the title,



## Internet Resource Management – The Role and Development of Metadata (cont.)

subject and description of an item, while intellectual property elements relate to the author, publisher and permissions for re-use. Lastly, instantiation elements describe the type and format of the resource, as well as where and how that resource is stored.

### **Placement of the elements**

Once the decision has been made as to which metadata elements to use, it becomes necessary to work out where they will be placed. There are essentially two schools of thought regarding this issue. Some believe metadata should accompany the resource it describes, while others maintain it should be separate and linked to the resource through other means.

Perhaps the easiest way to deploy metadata is to embed the elements within the document they describe. One advantage of integrating data and metadata is that no additional system must be in place to use it. Weibel (1997) states that once metadata becomes an integral part of the resource, it can be easily harvested and manipulated by web-indexing agents. Search engines such as Altavista look for meta tags when indexing websites, and summarise a document based on the information they find there.

The effectiveness of embedded metadata depends largely on which web-based syntax is used, and as a result, a variety of markup languages have been proposed to encode metadata elements. Iannella & Waugh (1997, online) point out that HTML meta tags are fast becoming the de facto standard, as they are widely used and easy to include in the header fields of HTML files. However, Boeri & Hensel (1998) dispute the use of HTML, claiming that it was defined as a presentation language and not as a method to structure document information.

Due to problems with HTML, projects have been conducted to trial the use of XML (extensible markup language). XML is a subset of SGML (standardised general markup language) which provides the basis for the encoding language used on the WWW. Unlike HTML, XML allows locally defined meta tags to be created as they are needed. This structure provides increased flexibility and specificity, and may allow users to conduct fielded searches of web documents in much the same

way as we now search library catalogues (Boeri & Hensel, 1998).

The alternative to embedding metadata within the original document is to store metadata labels separately from the resources they describe. This method is more in keeping with the model of the traditional library catalogue. Marsh (1997) advocates this technique, claiming that the meaning of metadata elements is not affected by whether or not the element is embedded in the resource that it describes.

### **Who should assign metadata?**

A subsequent point of contention relates to who should be involved in indexing electronic documents and assigning their metadata elements.

One emerging trend has been to encourage authors to describe their own resources through the local generation of metadata. Ideally this descriptive information would be provided at the time the document is created or shortly after. Fietzer (1998) mentions that author-generated metadata will help to build greater semantic coherence and result in more effective indexing processes. Ng (1996) believes entries are likely to be more reliable than those created in other ways, as the author is best positioned to know what their particular document is about.

Many web authors are interested in working with metadata to improve the ranking of their site with various search engines. However, metadata may not accurately reflect the contents of a site if practices such as 'spamming' are adopted by authors trying for high hit rates. Milstead & Feldman (1999) also elicit a warning that individuals creating metadata for their own resources may have little understanding of the finer points of description, and be unaware of the importance of their work to the overall information retrieval process.

This situation may be improved through the implementation of tools for creating and managing web-based metadata. Often these tools include templates stipulating the minimum number of elements an author must enter in order to adequately describe an information resource.

The second approach to assigning metadata involves the use of third party indexers to describe Internet sites. With this scenario metadata records are created and stored separately from the resource. They refer to the resource but are not actually embedded within the resource itself.

This concept closely emulates the cataloguing and indexing activities conducted by the library profession. As mentioned earlier, libraries have a long history of producing metadata in order to describe and facilitate the retrieval of print-based information resources. Each time we add a MARC (machine-readable cataloguing) record to our catalogues, we are entering a standardised set of metadata about an object.

As the Internet grew in size, the library world developed projects that attempted to catalogue web resources in traditional ways. One of the first attempts to provide structured access to Internet sites was the OCLC Internet Resource Project in 1991. The aim of this project was to determine whether the USMARC format and AACR2 (Anglo-American cataloguing rules) could be used to index Internet sites. Research found these tools could be used with only slight modification, leading to the creation of the MARC 856 field to carry the URL (unique resource locator) of a web page. This enabled users to access remote electronic resources directly from the library catalogue. Another well-known project is Cyberstacks, which attempted to classify the Internet according to the Library of Congress classification scheme.

However, despite initial success it quickly became obvious that traditional cataloguing methods were not the answer to locating information on the Internet. As Weibel (1995, online) relates, the massive amount of information requiring organisation is more than professional cataloguers and indexers can manage using existing methods. While formal library standards such as MARC provide richness in description, they are time consuming to create and maintain. Staff require extensive training and specialised software to design records that conform to recognised standards. MARC is ineffective in an environment where information is complex and constantly changing, and for the high level of Internet ephemera that does not warrant detailed cataloguing.



## Internet Resource Management – The Role and Development of Metadata (cont.)

As a result we must take into account the nature of the Internet and consider the most appropriate methods to organise this broad spectrum of resources. Lange & Winkler (1997) believe it is the principles of librarianship and the strengths of cataloguing that will be carried into the digital world, although not in their traditional time consuming format.

### **Metadata standards**

To simplify the implementation of metadata, various standards have been developed. Some are quite basic in their description, while others are complex and information rich. Standardisation initiatives are concerned with determining a common structure for the format and content of metadata elements. Each metadata standard should define the types of information to be described, what each element means, and the syntactic rules for individual element sets. See Appendix One for a list of significant metadata standards.

One of the biggest impediments to the development of metadata is the sheer number of different metadata formats. There is no one standard for the creation of metadata, and people are free to develop schemes for use within any discipline. This has resulted in many disparate systems, often with a high degree of overlap.

However, the value of metadata is limited if there is no agreement on which elements to use or what their contents should be. Cathro (1997) remarks that improved access to information resources will only be achieved by reaching a consensus on an international set of metadata elements, with the corresponding commitment to adopt them. Yet it seems unrealistic to believe that one standard will be adopted by all players in the electronic arena. The Internet is a decentralised initiative with no governing body, so the best we could hope for is a move towards a smaller number of standards with core elements sets that are applicable to the widest possible audience.

Various organisations around the world have sought to regulate and control the development of metadata. The International Organisation for Standardisation (ISO) has set up a metadata working group to take responsibility for the specification, management and exchange of

metadata. The American National Standards Institute (ANSI) has also formed a committee to develop a model for metadata representation and to investigate the use of registries to standardise metadata in specific domains (Milstead & Feldman, 1999). Taking a different focus, the W3C serves as a registration facility and development ground for a variety of metadata initiatives.

### **Dublin Core metadata element set**

One of the most renowned metadata standards is known as the Dublin Core Metadata Element Set. The Dublin Core grew out of a series of workshops designed to develop and promote metadata elements to facilitate resource discovery on the WWW.

The first workshop was convened in Dublin, Ohio, by OCLC in March 1995. The aim was to achieve consensus across a spectrum of international stakeholders to develop a simple method for describing a wide range of information resources, and to promote interoperability between resource discovery tools. Broadly speaking that consensus was achieved, resulting in a metadata standard with 13 descriptive elements. These elements are optional and repeatable, and are stored in the head HTML tags of the resource they describe. Most of the elements have commonly understood semantics enabling them to be applied and understood by many different users.

The second workshop was held in Warwick, England, in April 1996. Here decisions were made regarding the specific syntax of the elements, and impediments to the deployment of the Dublin Core model were identified. The second workshop also led to the development of the Warwick Framework. This framework adopted the realistic view that no single metadata standard could accommodate the needs of all communities, and provides a conceptual model for many different varieties of metadata to coexist (Brady, 1997).

The third workshop, run in September 1996 by OCLC and CNI (Centre for Networked Information), discussed the requirements for describing graphical images such as photographs, slides and video clips. It was agreed to expand the basic element set to 15 elements, adding a descriptive element for the content of visual resources, and also a rights

management statement. The final 15 elements are: title, creator, subject, description, publisher, contributor, date, type, format, identifier, source, language, relation, coverage and rights.

The fourth workshop was held in Canberra, Australia, in March 1997 as a joint venture between OCLC and the National Library of Australia. This meeting dealt with keeping the Dublin Core standard relatively simple, while still supporting the needs of users requiring a precise searching mechanism. It was suggested that the metadata set be extended to include the use of scheme, type or language qualifiers as they add richness to the semantic value of the metadata (Cathro, 1997). These optional substructures have since become known as the 'Canberra Qualifiers'.

Scheme qualifiers interpret the value of the metadata based on existing external standards, while type qualifiers refine the meaning of the data element itself. An example of a scheme qualifier would be the application of a controlled vocabulary such as LCSH (Library of Congress subject headings) within a metadata element called subject. Cathro (1997) mentions that the decision to implement qualifiers led to the minimalist–structuralist debate. Minimalists believe every element should contain unqualified free text, while structuralists argue for the right to use schemes in which they increase the level of detail and improve search precision.

The most recent metadata workshop was held in Washington DC in November 1998. To broaden the perspective, representatives from external metadata groups were invited to participate. The main focus of this gathering was to identify unresolved issues and assign them to formal working groups for resolution. One of the major issues considered was the implementation of controlled vocabularies (enumerated lists) for elements such as resource type and format to promote interoperability.

Given that the Dublin Core metadata set has no formal status as a standard, the rate of take up and the amount of interest it has generated has been remarkable. There has been widespread interest to adopt it as a standard and progress its development. See Appendix Two for a list of experimental projects that deploy the Dublin Core standard.



## Internet Resource Management – The Role and Development of Metadata (cont.)

### PICS

Although less publicised than the Dublin Core effort, PICS (platform for Internet content selection) is another metadata standard aimed at describing the content of Internet sites. PICS was originally conceived as a filtering mechanism to prevent access to certain sites according to a given set of criteria. However, as Armstrong (1997) points out, the mechanism to restrict and gain access to Internet sites are two sides of the same coin, and therefore PICS could be used to enhance subject searching and resource retrieval. It would be possible to search by subject in the normal way, and then filter out sites that do not match the criteria. Such filters could be set by information specialists or implemented on a search by search basis. Should search engines adopt these mechanisms, end users will gain extremely powerful access tools.

### Interoperability between metadata sets

It is unlikely there will ever be agreement on a single metadata scheme, as evidenced by the coexistence of many independently maintained metadata formats. Therefore, an ongoing subject of research is the relationship between different metadata schemes. Of particular note, the W3C has developed a concept known as the Resource Description Framework (RDF). The RDF is a metadata architecture for the WWW that will support the interaction of a wide variety of resource description models.

A framework for the transmission of metadata is necessary, as although metadata standards specify the elements to describe items, they don't specify a transfer syntax. As Chilvers (1998) relates, RDF uses XML to create a modular infrastructure that provides containers to aggregate packages of similar data types. A concept known as XML namespace is used to transfer metadata and prevent collision where two elements have the same names.

Further advances in this area include the concept of mapping and the development of crosswalks and metadata registries. One way to reconcile different description models is to map between related record sets. This creation of crosswalks aids the integration of metadata schemes by providing users with a single query model.

Chilvers (1998) points out that formal metadata registries are necessary to describe the semantics, structure and transport syntax of a metadata element set. Registries enable developers to list the authoritative version of metadata schemes and the specific elements defined within them.

### Conclusion

In conclusion, it can be seen that many organisations are attempting to improve the retrieval of resources on the Internet through influencing how the web is indexed. A number of metadata standards have been proposed,

together with the technological framework to support them. Ideally there would be a single metadata scheme applicable in all situations, but as this is unlikely to eventuate, one of the major challenges for the future will be to understand and integrate the different metadata schemes.

In terms of the library sphere, we must seek to redefine the concept of a library in the electronic age and how we might hope to select, manage and provide access to information resources. Initiatives such as metadata have a direct impact on service provision, as without the means of identifying and describing resources, we cannot present them to our clients.

### Appendixes and references

The appendixes and references for this article may be located on our website at <<http://www.curriculum.edu.au/scis/connect/connect.htm>>. Readers may also be interested in the article 'Demystifying metadata' by Marty Lucas at <<http://mappa.mundi.net/tripm/metadata/>>.

*Kylie Hassan is a student in the School of Information Management and Systems at Monash University. This article was first published in Cataloguing Australia and is reprinted with permission. Copyright © ALIA 2000.*



## What's New?

### 1. Valuing library collections

SCIS sometimes receive requests from Teacher Librarians who are required to place a value on their collections for insurance purposes. You may wish to read the useful information located at <<http://www.eddept.wa.edu.au/centoff/cmis/eval/library/avprice/index.htm>> to assist you in the preparation of your Disaster Management Policy.

### 2. Internet content complaints

There are laws that allow members of the public to complain about certain offensive Internet content to the Australian Broadcasting Authority (ABA). Australia's online hotline for Internet content complaints is <<http://www.aba.gov.au/what/online/complaints.htm>>. You can complain to the ABA about material on the World Wide Web, postings to newsgroups and other stored information. You cannot complain to the ABA about ordinary email, chat services and voice over the Internet.

### 3. New, amended and replaced subject headings

Please note that, as a result of some queries, the list of new headings and their references published on page 11 of *Connections 33* is being reconsidered. Any changes to this list will be reported in *Connections 35*, and will be published on the website. We apologise for any inconvenience caused.



# Reviews



book



CD



video



report

## **MindMatters – A Mental Health Promotion Program for Secondary Schools**

Publisher: MindMatters Consortium

ISBN: 0 642415 285

RRP: \$59.95

SCIS order number: 1008856

The MindMatters program uses a whole-school approach to mental health promotion and suicide prevention. It aims to develop school environments in which young people feel safe, valued, engaged and purposeful. Social and emotional well-being has been linked to young people's schooling outcomes, their social development, their capacity to contribute to the workforce and the community and reductions in the youth suicide rate. MindMatters helps schools and their communities, including teachers, parents and students, to take positive action to create a climate of mental as well as physical health within secondary schools.

A consortium of universities developed the MindMatters resources: the University of Melbourne, the University of Sydney and Deakin University, basing their work on the very successful Health Promoting Schools model. The Hunter Institute of Mental Health, Newcastle, NSW, and the Youth Research Centre, University of Melbourne, have prepared evaluation reports and the MindMatters pilot phase, which can be accessed at the websites:

<<http://www.himh.org.au/mmep>> and

<<http://yarn.edfac.unimelb.edu.au/MMReport/MMReportFace.htm>>.

All Australian government and non-government secondary schools are entitled to receive one free copy of the MindMatters kit on request. They also have the option of participating in a two-day professional development program, which will be available during 2000–2001. A brochure facilitating this process will be distributed to all secondary schools in June 2000.

The MindMatters program is supported by a website which will be continually updated throughout the two years of the program. This website will provide pdf files of the MindMatters resources, links to State and Territory curriculum frameworks, an annotated bibliography of resources and professional development materials.

*MindMatters – a mental health promotion resource for secondary schools kit* was launched at the MindMatters National Forum in March 2000. The kit comprises:

- *SchoolMatters: Mapping and managing mental health in secondary schools:* provides schools with a framework and planning tools to assist them with possible structures, strategies, partnerships and curriculum programs to promote and protect the mental health of all members of the school community.
- *Educating for life: A guide for school-based responses to preventing self-harm and suicide:* outlines the policies, processes and practices that contribute to a comprehensive approach to suicide prevention.
- Curriculum materials: designed for use in a range of learning areas and subjects including SOSE, Health and Physical Education, English and Drama classes. They are also suitable for use for home group or pastoral care activities.
- *Enhancing Resilience 1: Communication, changes and challenges:* creating connections; games collection; friendship and belonging; people, identity and culture.
- *Enhancing Resilience 2: Stress and coping:* coping; stressbusters.
- *A Whole School Approach to Dealing with Bullying and Harassment:* facing facts; giving voice; defining moments.
- *Understanding Mental Illnesses:* includes a video.
- *Loss and Grief.*

For further information regarding the MindMatters resources, program and professional development please access the website

<[www.curriculum.edu.au/mindmatters](http://www.curriculum.edu.au/mindmatters)>

or contact Curriculum Corporation

Tel: (03) 9207 9600 or the Australian

Principals' Association Professional

Development Council Tel: (08) 8463 5862.

## **Science Australia 3 and Science Australia 4**

ISBNs: 1 86366 429 7 and 1 86366 430 0

Publisher: Curriculum Corporation

RRP: \$31.95 each volume

SCIS order numbers: 972293 and 973925

The clear virtue of both these student texts is the classroom research that has gone into their development. Both books are most suitable for years 9 and 10 students, and each opens with a statement to the student which is reassuring in its tone: science is seen as being something that occurs around us every day. The unambiguous message is that science is not something which happens only in a laboratory.

The particular difference of these books, compared to many others which are available, is the emphasis on Australian science and scientists. Fundamentally, the two books use constructivist ideas of teaching and learning in a context that encourages student skill and knowledge development. Linked to the materials are outcomes for each State and Territory, found on Curriculum Corporation's website at <[www.curriculum.edu.au/sciaust](http://www.curriculum.edu.au/sciaust)>. Viewing this site is essential if the books are to be used well alongside existing school assessment strategies and courses of work.

Each unit has diverse Activities and Inquiries, which range from group discussions and individual research to more advanced practical investigations. Experimentation is viewed as mandatory. It can range from the simple recognition of sounds to a study of hearing damage due to sound exposure.

Underpinning the experimentation in both books is thorough textual information supported by excellent photographs and other visual sources. The central idea is to represent information and quantify it in ways that can be readily oriented by students.

An excellent index is provided in each book and the questions embedded throughout the text indicate developing sound scientific understanding is a priority together with maintaining student interest.

*Reviewed by Christopher Bantick, The Canberra Times, 2 December 1999, p 10.*

These products are available from Curriculum Corporation, Tel: +61 3 9207 9600 or 1800 337 405 outside Melbourne metropolitan area, Fax: +61 3 9639 1616, Email: [sales@curriculum.edu.au](mailto:sales@curriculum.edu.au)



# Internetting Corner

*The following websites can be easily accessed on the Internet via the links found on Curriculum Corporation's Connections Website for Issue 34: <http://www.curriculum.edu.au/scis/connect/connect.htm>. The websites have been catalogued by the New South Wales Cataloguing Agency and added to the SCIS bibliographic database. You may wish to download these catalogue records to add to your school's library database by entering the SCIS number in SCISWeb or SCISCD.*

## **Australian Science Teachers Association**

<http://sunsite.anu.edu.au/asta/>  
Published by the Australian Science Teachers Association (ASTA) this website includes links, services, publications, projects and forthcoming activities for science teachers in primary schools, high schools and tertiary institutions.  
SCIS 1007649

## **Bibliomania: Best Online Literature and Reference Books**

<http://www.bibliomania.com/>  
Utilising this site's search engine users can access a variety of full text works such as classic and popular fiction, drama and poetry. Available reference works include ancient texts, dictionaries, Roget's Thesaurus, religious texts and quotations.  
SCIS 1007665

## **Favorites Anywhere! Store Your Bookmarks Online and Access Them From Anywhere!**

<http://www.favoritesanywhere.com/index.html>  
By applying this service, computer users can access their own bookmarked Internet websites from other computers running on a variety of operating systems. Favourite websites are therefore kept private and separate when using shared computers or systems.  
SCIS 1007692

## **The Geoffrey Chaucer Website Homepage**

<http://icg.fas.harvard.edu/~chaucer/>  
Intended for students studying Geoffrey Chaucer at Harvard University, this website is also applicable to English teachers and senior secondary students. Chaucer and *The Canterbury Tales* are covered in depth. Additional resources relating to both earlier and later writers are also included.  
SCIS 1007697

## **The Great Olympic Virtual Adventure With Spike and Eddie**

<http://www.schools.nt.edu.au/olsu/olyadvent/>  
Emanating from the Open Learning Support Unit of the Northern Territory Department of Education, this cross-curricular site encourages students to take part in an adventure game based on the Sydney Olympics. An activity book and additional Olympic sites can be easily accessed.  
SCIS 1007723

## **Greek Mythology**

<http://www.mythweb.com/>  
Information, lesson plans and links devoted to the heroes, gods and monsters of Greek mythology are featured here. The primary sources used for compiling this site were Homer's Iliad, Homer's Odyssey and the Library of Apollodorus.  
SCIS 1007694

## **IFLA/UNESCO School Library Manifesto**

<http://www.ifla.org/VII/s11/pubs/manifest.htm>  
The International Federation of Library Associations (IFLA) and UNESCO have cooperated in presenting a concise manifesto on school libraries that should be read by Teacher Librarians. Content includes a mission statement, legislation, goals, staffing and management.  
SCIS 1007709

## **IMAGES 1 – National Library of Australia Documentary Image Collection**

<http://www.nla.gov.au/images1/>  
Over 20,000 paintings, drawings, prints, objects and photographs pertinent to Australia and its place in the world are available here. The images, from the archives of the National Library of Australia, have been scanned and digitised and access is simple due to the effective search engine.  
SCIS 1007594

## **Infonation: Choose Countries**

[http://www.un.org/Pubs/CyberSchoolBus/infonation/e\\_infonation.htm](http://www.un.org/Pubs/CyberSchoolBus/infonation/e_infonation.htm)  
Developed for students wishing to compare statistical data from the world's countries, this website is published by the United Nations. Students can compare extensive statistical data between countries using the groupings of Geography, Economy, Population and Social Indicators.  
SCIS 995661

## **Maori Resources**

<http://www.cwa.co.nz/eduweb/edu/maori.html>  
This collection of websites from New Zealand includes links to a variety of Maori-related resources, or Maori language websites. Of particular interest is the Online English–Maori Dictionary Website from The Information Science Department of the University of Otago.  
SCIS 1007629

## **A Mystery of Space: STARS**

<http://library.thinkquest.org/25763/>  
Initially developed for the educational website design competition, ThinkQuest, this award-winning site was produced by two secondary students. It uses many of the capabilities the Internet offers such as movies, photos and interactivity. The developers have included a bibliography and a choice of age-appropriate content (primary or secondary).  
SCIS 1007636

## **National Library of New Zealand Home Page**

<http://www.natlib.govt.nz/>  
The National Library of New Zealand houses much of New Zealand's documentary and visual heritage. Features for schools include details of various children's literature collections, schools' services, Timeframes (online heritage images) and a variety of educational links.  
SCIS 1007646

## **NewsTrawler Homepage**

[http://www.newstrawler.com/nt/nt\\_home.html](http://www.newstrawler.com/nt/nt_home.html)  
Based in Sydney, NewsTrawler is a free service using a parallel search engine that searches the news archives of online publications from many countries. The publications are extensive and range from The Hindu to The Tallahassee Democrat. Searches can be customised using combinations of sources, subjects and countries.  
SCIS 1007675

*Reviewed by Nigel Paull, South Grafton Public School. [paull@turboweb.net.au](mailto:paull@turboweb.net.au)*

*The Internet sites abstracted in Internetting Corner are often of a professional nature and should be initially viewed by teachers and Teacher Librarians to determine suitability for students. Remember the links, content and even the address of a site may change quickly.*