Strategic Development of Library Reference Collections in Higher Education: a case study at Loughborough University Library (UK)

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Abstract

Within the Higher Education sector there have been significant and ongoing changes in the methods utilised by library users to acquire information. In light of this recognition, a study was undertaken by a project team at the University Library, Loughborough University, to determine the most appropriate strategy for developing its extensive collection of printed reference material. Issues of space were a major consideration. The intention was to base subsequent recommendations on evidence-based, democratically obtained data. A largely practical approach was adopted with data collected by means of a series of open meetings, a Step analysis and usage surveys. The subsequent results pointed to a requirement to base future development of the collection on a model comprising low levels of printed material with correspondingly high levels of electronic material and management intervention. The recommendations are currently being implemented at Loughborough and may be appropriate for other academic libraries.

Introduction

First and foremost libraries are services. No service survives without continuously re-examining its products and the ways in which they are delivered to ensure that they meet their customers' real needs.

(Brophy, 2005, 216)

The purpose of this paper is to present a summary of a project undertaken at the University Library, Loughborough University, to establish the most appropriate means of providing a reference collection and service. Usage, space, student expectations and changes in modes of learning were all contributing factors in bringing the collection to the forefront of strategic focus. A steering group comprising six members of the library staff was established with the specific remit to gain an overall perspective of the current and future relevance of the collection to the needs of academics, students and library staff. The objective was to identify a series of recommendations for the strategic development of the collection.

This article seeks to present an overview of the project and to place it within the context of issues affecting all libraries within the higher education sector. Given the emerging trend for evidence based information practice, in which "the best available evidence moderated by user needs and preferences, is applied to improve the quality of professional judgments" (Booth and Brice, 2004), particular focus is placed on the methodology and ensuing results as the project was underpinned by a desire to base its recommendations on evidence based outcomes. The authors are of the opinion that other institutions considering a similar enterprise may find this aspect of the project enlightening; and with this in mind both the positive aspects and limitations of the methods undertaken have been addressed.

Factors affecting changes in higher education and academic libraries in 2005

In April 2005 a decision was taken to review the future development of the Reference Collection at Loughborough University. The move to do so was not the result of one single factor or overriding need but due to a range of issues which taken together necessitated a relatively speedy and conclusive decision-making process. No doubt, many of these factors will resonate with other libraries operating within the constraints of Higher Education.

Utilising space to its full advantage has become an issue of utmost priority within the library sector. The need to accommodate an expanding number of students and a subtle shift in learning styles from individual to a more collaborative mode of learning has made library space an issue of great concern. The requirement to create areas where students have adequate resources by way of equipment, furniture and technology, alongside the necessity of creating a distinction between silent and freely consultative areas of study has brought the issue of space to a head. As mentioned in the Times Higher Education Supplement:

"There are real tensions between researchers and undergraduates and how they want to use the library," says Michelle Shoebridge, director of information services at Birmingham University. "When I was a student you used to sit silently and work, but now it is all about group working and problem-based learning." The culture clash is forcing academic libraries to be more creative about how they use their space.

(Fazackerley, 2004)

This issue has been addressed at Warwick University with the advent of the Warwick Learning Grid, a separate building specifically designed to accommodate these needs. For institutions where such a radical move is not feasible, other options may need to be looked at within the confines of the library building to free-up sufficient space to create a similar environment for student learning.

Alongside learning styles, both student expectations and funding arrangements have undergone nothing short of a revolution in the past two decades. With the advent of the student loan and demolishing of the grant system, student expectations of University services are high. In light of this, value for money has become a priority. It is the responsibility of the library to ensure to the best of its ability the needs of users are met. For the 'average' student the expectation is for 24-hour availability of information, accessible if possible from their own PC in a home environment, which may even be situated off-campus. In view of this, libraries may have to evaluate whether usage of their printed reference material warrants its size and location. Historically, the reference collection has been located in easily accessible prime space. It is often vast in size, not least due to the physical scale of material of this nature in terms of both individual and multi-volume items.

With regard to 24-hour library access to printed material few academic libraries are able to provide such an extensive facility. However, with the advent of so much information availably freely over the web via powerful search engines like Google, it is unsurprising that the relevance of printed reference material has been called to account. Indeed, this would appear to be an international issue. As the Head of Main Library Reference at the Michigan State University Libraries states:

We…see profound changes in the relationship between library users and reference resources. At best, students, scholars and other researchers have gained the capacity to perform their own searches without mediation, around the clock and from convenient locations. At worst, we have seen high quality reference tools ignored in favour of free sites on the Internet.

(Sowards, 2003, 135)

The question is whether material is simply being duplicated unnecessarily. This is not to say that the perceived reliance of students on information gleaned ad hoc from the web should be actively encouraged but it is an issue which needs to be addressed in terms of its impact on the reference collection.

Also, without a stringent weeding policy in place, given the very nature of hardcopy collection development, it is inevitable that the majority of academic libraries will, at some point, have to address issues of space. Although to some extent this may be counterbalanced by the increasing amount of material available electronically and digitally, one does not replace the other at an even pace and ever-present financial constraints ensure that academic libraries are unlikely to become totally 'virtual' in the near future. In addition, an increasing volume of electronic material again puts pressure on space in terms of the increased technology required to utilise it.

The University Library Reference Collection – the focus of the case study

In light of these factors, in April 2005 the decision was taken to review Loughborough's reference collection. To put the collection in context, a little background information is helpful. Loughborough is a single campus university with a staff of 3000 and 12000 students. The University Library building is the sole campus library and is divided into three levels, each being serviced by an enquiry desk manned on a rota base by members of staff. The stock includes 400000 books, 4000 current serials and 6000 electronic journals. There are thirty-one full-time and fifty-eight part-time members of Library staff.

When this project began the Reference Collection was a vast body of material housed as an autonomous collection on the entrance floor of the Library in a choice and easily accessible location. Such was its size, it was indexed as an individual collection on the library catalogue. It consisted of a range of material providing swift and easy access to specific factual information or data. Items included atlases, dictionaries and thesauri, directories, encyclopaedias and year books. The collection had grown significantly over the years and by the beginning of 2005 consisted of 138 bays, a total of 686 metres of shelving.

The influence of the generic factors outlined above was significant in terms of the University Library. In particular, given the prime location of the collection and its size, there was a general perception that it was significantly underused by Library staff, academics and students. Although this feeling was not at this stage evidence-based, it arose from a general observance that relatively few users were sighted utilising the material, this resulting in a correspondingly small quantity of reshelving. Enquiry desk staff did not appear to be either referring users to the collection on a regular basis or using the collection themselves when answering queries, preferring to use electronic material as a first and often only port of call.

The collection had grown to such an extent there was a real sense of there being no direction in terms of its future development, curtailment or possible replacement. There had evolved a need to determine whether the material was up-to-date, what it comprised and whether it was deemed to be of significance to individual academic departments.

Put simply, the Library needed to establish the relevance to the electronic age of a physically impressive yet infrequently weeded and increasingly unwieldy collection of material. As stated, "one should not … assume that the larger the collection, the better it serves its user" (Nolan, 1999, 11).

Considering these factors together the theoretical decision to review the future development of the collection was timely. However, given the nature of the material in question, the matter was not without its immediate concerns and possible areas of contention. Due to its generic makeup, a reference collection is not designed to be utilised by a specific type or body of users, but as a source of information available to all interested parties. As such, any outcomes needed to satisfy as many of these users as possible with the sensitivities of all concerned being taken into account at all stages. At the outset, there was a significant degree of uncertainty as to the level of interest the investigation would generate and the amount of potential opposition to any changes from users. There existed the potential for divergences of opinion even within membership of the same user group.

It was necessary to decide who should be involved in any process of consultation with those currently playing key roles in the selection, maintenance and processing of material being invited to air their views and to be fully involved in any retention programme. This would include academic librarians and other professional Library staff involved in both support and enquiry services. A key objective was to undertake a freely consultative democratic process. Departmental members of academic staff would not be involved in the project but were to be invited by the academic librarians to select material for retention.

The overriding principle that forthcoming recommendations be based on evidence ensured early on that the decision was taken to incorporate various modes of data

collection into the methodology. A period of four months from April to July 2005 was allocated for an outcome to be reached, the remit being for implementation in time for the start of the 2005-2006 academic year.

Methodology

Establishing the project team

As discussed, the decisions to be taken about the reference collection were not seen as straightforward or obvious. It was also anticipated that there would be a wide range of internal views on the future of the reference collection ranging from preserving it as it was to doing away with the whole collection. With this level of uncertainty it was decided to set up a small research project to inform the Library's strategic direction regarding the reference collection. A project team with six members was established with the Service Development Manager being the project leader. The team consisted of a mixture of staff from different sections of the Library – an Academic Services Manager, an Academic Librarian, a Support Services Librarian and two Senior Library Assistants. Its role was to interpret data, trends and perceptions, monitor progress as well as make final recommendations. An underpinning approach was to involve other Library staff in activities to generate concepts and ideas. The work benefited from an agreed project plan that included various milestones to be achieved over a four month period.

Data collection

Phase 1

There were three specific phases identified in the project. Thus Phase 1 was primarily concerned with collecting data and intelligence to be used to inform agreed decisions and direction. Its main remit was to explore the purpose of reference collections in University libraries in 2005 and beyond. It also aimed to determine what quality characteristics exist for a University reference collection. There needed to be an exploration of the implications of electronic information within the context of reference collections.

A group activity open to all Library staff was held which had two main activities. The first was to develop a STEP or PEST (Manktelow, [n.d.]) analysis (sociological, technological, economic and political factors) of reference collections and reference services. A further activity was to produce a group overview of what factors were seen to indicate quality reference collection and services. This was produced using the nominal group technique (Delbecq, 1975). This involves identifying a question and then asking group members to individually record their own responses. These responses are then collected and used to produce a definitive list of unique responses. The group are then asked to rank their individual responses to the agreed responses.

An electronic discussion list, lis-link (LIS-LINK@JISCMAIL.ac.uk, 2005) was consulted to seek wider views on the future of reference collections. Various pragmatic approaches were agreed to generate quantitative data that could be used in discussions and decision making. Over a two week period, staff on the Enquiry Desk noted the numbers of times they personally used the collection when answering

enquiries or directed users to the collection. Another section of the Library agreed to monitor the re-shelving of reference collection material over a similar time period.

Phase 2

The purpose of the second phase was for Library staff to take the data generated from phase 1 and use it to establish how Loughborough University Library changed or did not change its reference collection and services. It was important for the project that the process both involved Library staff whilst at the same time generated an agreed consensus. A collective decision had to emerge. The group were presented with the data generated in Phase 1.

The project group had to consider in detail what criteria to use in coming to an agreed decision. After discussion the Project Group determined the three key variables in a reference collection: the extent to which it is paper based (low or high), the extent to which it is electronically based (low or high) and the extent to which it is consciously managed (low or high). These three variables were then arranged to generate eight different models of reference collection. In a group exercise the Library staff group used the quality indicators generated in Phase 1 to rate each of these individual models. This then allowed a ranking approach to determine which of the eight models was the preferred model to inform future direction.

Phase 3

The final phase involved taking the input from the second phase and translating it into broad recommendations. The Project Group generated the recommendations and this was considered more widely by the Library.

Results

Phase 1

From each phase various results emerged. The first phase was concerned with gathering contextual information around reference collections and reference services. A total of twelve Library staff attended an open meeting which was intended to explore how the Library's reference collection could be made fit for purpose. A group exercise included undertaking a STEP analysis around the University Library reference collection. This approach proved to be applicable to the general area of reference collection in academic libraries. The STEP/ PEST analysis has recently been developed to include an 'environmental' category (STEEP) but this was seen not to be relevant for this specific investigation. In sociological terms the following issues were established as being important:

- 24/7
- Flexibility in learning modes (e.g. part-time, distance)
  User expectations about 'Google'
- Impact of fee paying on students' expectations with concept of 'customer'
- Different groups have different perception of term 'reference'
- Pedagogical changes are occurring in higher education leading to 'spoon feeding' and less emphasis on reading around

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- Students prefer 'electronic sources'
- Students have a lower awareness of reference collection
- Increased size in campus means physical access to reference collection is more difficult

Technological issues identified were:

- Internet
- Increased availability of electronic databases
- 'Google'
- Information is instantly available (or perceived as such)
- More and more information previously available in print is available electronically
- Remote access is now available to information
- More users have their own hardware with network connection
- Electronic information is more easily updated

Economic factors proposed by Library staff were

- Electronic resources are expensive
- Move to electronic provision leads to re-current expenditure
- Possible to continue with hard copy alone
- Students have other demands on their funding which reduces their likely expenditure on books
- Print reference collections take up a lot of space
- There are staff costs attached to managing reference collection

When political aspects were considered the following emerged:

- Discarding reference material can lead to conflict with external groups
- Reference books can be seen as a precious commodity even though never used
- Vituperative academics
- Library has power to withdraw reference books
- Within the Library, there are different perceptions on the role of the reference collection (i.e. quick reference vs. reference)
- Reference books can have a different role depending on the academic area

Phase 2

The nominal group technique was also used with the twelve participants to identify what the key characteristics of a reference collection should be. The nominal group technique is an approach to achieve an agreed group perspective on an issue whilst at the same time allowing significant input from individuals. Its major strength is that it allows people to express their own views, listen to others' views and also come to a consensus. The nominal group technique structure also supports a thorough analysis of the identified options. Table 1 shows the outcome of the nominal group technique session.

Ranking	Aspect	Score	No. times chosen 1st
1st	Reflecting users' needs	(18)	(4 @ first choice)
2nd	Accuracy and up-to-date	(15)	(3 @ first choice)
3rd	Accessible to users	(9)	(2 @ first choice)
4th	Regularly reviews	(7)	(2 @ first choice)
5th	Visible	(5)	
6th =	Provide quick information not on web	(3)	(1 @ first choice)
6th=	Well promoted	(3)	
8th=	Accessible to Library staff	(2)	
8th=	Close to the enquiry desk	(2)	
8th=	Complementary to 'Google'	(2)	
	Electronic access		
	Good place to work		
	Hard copy should not be purchased where freely available on web		
	Not too extensive		
	Support research		

Table 1 Outcomes from nominal group session on key characteristics of reference collection

Phase 1 included gathering quantitative data about the levels of usage of the reference collection. The data collected showed that enquiry desk staff referred a small number to the reference collection and used it sparingly themselves. A low level of usage was revealed upon analysis of the reference collection books waiting for re-shelving in the mornings. The book titles used were dominated by a few heavily used items. Four responses were received from the lis-link electronic discussion list when an e-mail was posted asking for views on the future of reference collections in libraries. This response was somewhat disappointing but the replies received indicated reference collections had been an issue.

Phase 2 involved taking the data generated in Phase 1 and using it to help decide the future of the reference collection. Again an open meeting was held within the Library with eleven attendees. Special effort was made to ensure the academic librarians attended. There were two parts to this group activity. Using the various permutations of the three variables (level of electronic information, level of paper information, level of management) eight different models of reference collections were produced:

- High IT / Low print / Low management
- High IT / Low print / High management
- High IT / High print / Low management
- High IT/ High print/ High management
- Low IT / Low print / Low management
- Low IT / Low print / High management
- Low IT / High print / High management
- Low IT / High print / Low management

The group then looked at each model to identify the individual relevant advantages and disadvantages. The criteria established in Table 1 were applied to each model to

establish whether the model met the criteria. The outcomes of these examinations are included in Appendix 1.

The assessment against the criteria showed that the group's preferred model was high IT/ low print/ high management. Phase 3 was involved with the development of clear recommendations from the Phases 1 and 2 generated data. These are discussed and identified in the paper's outcomes.

After the project had been completed it was possible to identify both the merits and the limitations of the methodology. The STEP analysis proved to be a highly pertinent means of eliciting and bringing to the fore a significant range of key determining factors from the sociological, technological, economic and political spheres. By employing this means of data collection the project group was able to identify this as being a complex issue with many factors requiring consideration before policy decisions are made. A total of twenty eight issues emerged, with a degree of overlap, from which key trends could be detected. These included the following:

The influence of technological innovation per se and its effect on the student population in terms of expectation and mode of learning has come to the fore as a pivotal factor in determining the way forward in terms of reference service provision. There is a general feeling that, culturally, students are becoming progressively dependent on electronic resources. This may be due to their perceived ease of use, 24-hour accessibility and ability to answer most questions swiftly and accurately. There may even be a lack of student awareness as to the availability of printed reference material.

The appropriateness of the methodology can also be measured in terms of how it strived to produce an evidence-based series of recommendations. The clear intention of the steering group was to ensure the outcomes were not simply a reiteration of the thoughts and opinions of individual members, but should reflect the views of Library staff in general. The project was seen to be conducted democratically with key decision makers being invited to attend all Open meetings.

The nominal group technique used to determine the key characteristics of a reference collection was effective in the sense that it delivered an agreed group outcome based on individual perceptions. However, it is also important to mention its intrinsic drawback in that due to time limitations both in terms of the four month deadline and other demands on individual participants there was little opportunity for considered opinion or subsequent reflection. Similarly, the Phase 2 Open meeting designed to produce the preferred reference collection model was again undertaken with strict limitations on time. It is not inconceivable that had time pressures not been a factor, the participants may have delivered different outcomes.

In terms of the methodology used to garner qualitative data, again, the processes may be perceived as being less than thorough and conclusive. It is acknowledged that in order to produce legitimate and thoroughly validated data for enquiry-desk referral and reference material usage, it is necessary to undertake assessment techniques over a considerable period of time to take into account fluctuating levels of usage throughout the academic year. Again, the project was constrained by time. Indeed, had it not been undertaken during the University exam time it is possible that usage and referrals would have been greater prior to this period. For a useful case study undertaken to assess the functionality of the reference collection and unconstrained by time see Sendi (1996). This details an investigation resulting from a realization that:

The collection had outgrown not only the available shelving space, but possibly also its usefulness to patrons……there was nothing but anecdotal evidence on whether those materials were needed and used by our clientele.

(Sendi, 1996, 17)

As a way of summarising the effectiveness of the methodology it is fair to say that it was successful in terms of achieving its overall objective which was to produce an agreed model for recommendation based on democratic and evidence-based outcomes, but to some extent the process was diminished by the necessity of delivering an outcome within a period of time which did not allow for the adequate gathering of fully substantial and conclusive evidence.

Discussion

The motivation for this project was a perceived requirement to determine what, if any, steps needed to be taken to make the reference collection fit for purpose in the context of a changing and evolving library and learning environment. The key point to emerge from the process was that the results validated the need to do something. Prior to the investigation there had been a general perception that the collection in its current form was no longer appropriate to the needs of its users and the results certainly reflect this. The collection, although substantial and academically impressive, was underused in terms of its physical size and prime location within the Library.

The project results also highlighted the reality that whichever model is used to shape future development, it will come with its own set of advantages and disadvantages. This was made clear during the nominal group technique when no model was found to be perfect.

The preferred model of high IT / low print / high management indicated that although the group were dissatisfied with the Reference Collection as it stood; there was a definite understanding that a service of some kind was still required by users. To emerge as an effective and relevant service for the needs and expectations of modern users, the collection had to change in terms of mode of delivery, size, organisation and management. It was no longer acceptable to continue to develop the service as a predominantly print-based collection taking little account of the vast amount of material now available electronically. This was recognised by the project group as an important factor in determining recommendations for the strategic development of the service.

In its present form, the Reference Collection was viewed by the group participants as a worthy yet outdated means of providing reference information, particularly in light of technological advances. The changing needs and expectations of users had resulted in a resource which was currently not fit for purpose.

The project outcomes also illuminated the need for personal intervention to ensure a productive service. There had emerged a need for a high level of management, this accurately reflecting the outcomes of the nominal group session on key characteristics of a reference collection. Many of the factors receiving top ranking translate to the need for greater managerial input such as the need for it to reflect users' needs, for the material to be accurate and up-to-date and for the collection to be subject to regular review. This would mark a significant change in reference collection management at Loughborough.

The limitations of the methodology have been acknowledged by the authors and outlined in detail. However, it is appropriate to note that from the outset the purpose of the exercise was not to undertake a meticulously planned and executed piece of research. This was always a practical piece of work executed with a specific remit and deadline to meet. Careful reflection, observation and long-term data collection was not an option. Decisions had to be made. The problems encountered as a consequence could be taken on board by other institutions planning a similar project.

It is worth noting that within the Library it is the Senior Management Team's prerogative to make the final decision in terms of the strategic way forward. Given the contentious nature of the issue, it is not possible to satisfy all concerned parties and at best the Library can involve as many key players in the consultative stages as possible, on the understanding that the Library is ultimately responsible for implementing change.

Outcomes

The Library's Management group accepted the majority of the recommendations and the new collection, based on the model of High IT / Low print / High management, is currently being put into practice with the following progress made.

Low print collection:

Over the summer of 2005 the reference collection was significantly reduced in size from 138 bays (686 metres) to 54 bays (268 metres). This was achieved using a three stage iterative approach. The first materials to be retained were those which appeared on lists of sources, compiled by the Library's faculty teams, as part of a training programme on answering reference queries. These lists of sources used in staff training were a logical starting point as awareness of the contents of the print collection is vital if its resources are to be exploited. As Landesmann observes:

Users often don't know that what they need is a reference book. Most user requests are for books or journals. It frequently requires a reference librarian to connect a user to a reference book.

(Landesmann, 2005, 6)

Much earlier Prytherch advised that:

The simplest policy for stock provision to be used for reference purposes is to concentrate on stocking a small number of titles, and providing effective staff training so that all staff know how to use the material.

(Prytherch, 1988, 47).

This advice is all the more crucial now since, in contrast to 1988 many reference queries are answered using search engines like Google, federated search tools like MetaLib or via bibliographic databases, eprint archives and other electronic subject information.

The second stage was to consider reshelving data – any evidence users had made use of an item was reason to keep it. Finally the subject perspectives of academic librarians and the Head of Support Services were also used as a means of deciding which material should be retained in the reference collection. Weeded material has

been moved to the main lending collection whilst smaller proportions were sold, discarded or removed to a remote store.

High electronic collection:

The (often recurrent) costs of an electronic reference collection will necessitate an enlarged reference collection budget. A further barrier to implementation is the licensing restrictions of both JANET and publishers which often preclude access by non-members of the university. It is to be hoped that these concerns can be overcome since electronic reference material offers a number of advantages: remote access, searchability and in some cases the possibility of COUNTER-compliant usage statistics. In light of these advantages, it was agreed that an electronic collection should be explored and developed as funds allowed. So far Kirk-Othmer Encyclopedia of Chemical Technology and the Oxford English Dictionary have been purchased and a number of products are being trialled.

It seems likely that the users' preference for electronic communication will ensure electronic material will predominate in the years to come. During the last 3 years at Loughborough, the Library's electronic "Ask a Librarian" queries have increased steadily whilst in person queries have fallen. It may be reasonable to concur with Janes (2003, 84) that if people are asking their questions digitally, they probably prefer a digital answer.

High management input:

To hold the gains made in developing the collection it is important to manage the collection more adroitly. One of the key components of managing the collection is to try to ensure the collection is limited to material which cannot be accessed by using a web search engine. As Janes engagingly puts it, reference librarians have to:

figure out what we can do that Google can't or won't, do that as well as it can be done, (and) publicize the bejesus out of it

(Janes, 2003, 32)

This means consistent promotion and management of the collection. To achieve this, the Enquiry Services Manager will chair a group charged with identifying strategic direction for the reference collection, monitoring its use, managing its development and coordinating training. Electronic reference resources have been added to the MetaLib portal and a web page created to promote use of both electronic and hard copy resources. Forthcoming information literacy classes will also emphasise the importance of the reference collection.

Conclusion

Despite the limitations, overall it was deemed to have been a useful and largely successful project. The objective of establishing a series of recommendations based on evidence-based, democratically obtained data was achieved within the designated timescale.

The undertaking exposed a number of staff members to the processes of project management and as such served as an effective learning tool. It also actively

encoraged joint working across Library teams. The process proved to be a productive means of acquiring evidence to present to members of academic staff requiring specific detail on how the recommendations were formulated.

It is important to make clear that there is no inference on the part of the authors that all academic libraries with similar collections should reconsider their relevance. A single case-study cannot be representative of all academic libraries but may provide a guide for good practice.

Given the prevailing needs, cultural changes and economic factors pertaining to the Library, a large print-based reference collection had become inappropriate for Loughborough. Similar situations may apply to some academic libraries but may not be relevant to the circumstances of others. For example, for libraries where there is no immediate pressure on space and where the material is utilised to an acceptable level the dismantling of a collection of often expensive and well-respected material would appear inappropriate. Equally, for institutions hard-pressed for space or moving into virtual reference this article may provide food for thought. For Loughborough it was certainly an enlightening exercise in terms of collecting quantitative data to determine levels of both usage and staff referral. Without this gathering of information there would have remained merely a prevailing 'feeling' that the collection was underused. This data was sufficient to point up the limitations of the collection and to provide a way forward.

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Appendix 1 Advantages and disadvantages of reference collection models and evaluation against agreed criteria

Model 1   High IT / Low print / Low management
Level of electronic information
Physical size of print reference collection
Focussed management of collection

	→
	←
	←
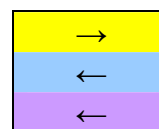
Criteria	Yes	No
Meets user needs	9	1
Accurate & up-to-date	9	1
Accessible to users	10	
Reviewed regularly	2	8
Visible		10
Provides quick information	9	1
Well promoted		10
Accessible to Library staff	10	
Close to enquiry desks	5	2
Complementary to Google	10	
Effective use of space	10	
Total	**74**	**33**

Advantages: 24/7 access and distance learners, wouldn't take up much space, wouldn't involve much staff time
Disadvantages: expensive, low management means collection might not be promoted/ well used and might not be kept up to date/ might exclude some provision of some quality hard copy sources

Model 2 High IT / Low print / High management

Level of electronic information
Physical size of print reference collection
Focussed management of collection

| → |
| ← |
| → |
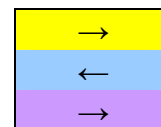
Advantages: 24/7/ wouldn't take up much space/ well promoted should mean well used/ likely to be popular with users
Disadvantages: expensive/ excluding some hard copy quality sources/ expensive in terms of staff time

Criteria	Yes	No
Meets user needs	9	1
Accurate & up-to-date	10	
Accessible to users	10	
Reviewed regularly	8	2
Visible	5	5
Provides quick information	10	
Well promoted	10	
Accessible to Library staff	10	
Close to enquiry desks	7	3
Complementary to Google	10	
Effective use of space	10	
Total	**99**	**11**

Model 3 High IT / High print / Low management

Level of electronic information
Physical size of print reference collection
Focussed management of collection

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| ← |
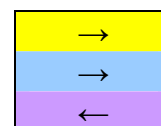
Advantages: Duplication/ 24 hour access (backup)
**Disadvantages**: Low management unwieldy/ lack of staff/ lack of promotion/ no staff back up/ high cost/ incompatibility

Criteria	Yes	No
Meets user needs	9	1
Accurate & up-to-date	7	3
Accessible to users	10	
Reviewed regularly	3	7
Visible	8	2
Provides quick information	9	1
Well promoted	4	6
Accessible to Library staff	10	
Close to enquiry desks	3	7
Complementary to Google	5	3
Effective use of space	1	9
Total	**69**	**39**

Model 4   High IT / High print / High management

Level of electronic information

Physical size of print reference collection

Focussed management of collection
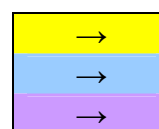

Advantages: Backup through duplication/ management so up-to-date/ IT – 24 hour access

Disadvantages: High cost – duplication/ management – time – salary costs/ Print space requirements/ IT – training and promotion

Criteria	Yes	No
Meets user needs	9	1
Accurate & up-to-date	10	
Accessible to users	10	
Reviewed regularly	10	
Visible	10	
Provides quick information	9	1
Well promoted	10	
Accessible to Library staff	10	
Close to enquiry desks	2	8
Complementary to Google	5	3
Effective use of space	1	9
Total	**86**	**22**

Model 5   Low IT / Low print / Low management

Level of electronic information
Physical size of print reference collection
Focussed management of collection

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←
←
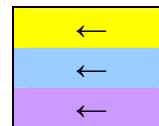
Advantages: requires little management/ not much space required/ low cost
Disadvantages: limited resources/ not up-to-date/ would not accommodate distance learners/ low profile as not promoted

Criteria	Yes	No
Meets user needs		10
Accurate & up-to-date		10
Accessible to users		10
Reviewed regularly		10
Visible		10
Provides quick information	2	8
Well promoted		10
Accessible to Library staff	2	8
Close to enquiry desks		10
Complementary to Google	5	5
Total	**16**	**94**

Model 6   Low IT / Low print / High management

Level of electronic information
Physical size of print reference collection
Focussed management of collection

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→
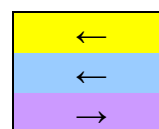
Advantages: up-to-date and relevant/ not much space required/ cost of material would be low/ collection would be small and beautifully formed
Disadvantages: staff time and costs/ promotion would be a waste of time if no good/ not comprehensive or relevant for users' needs

Criteria	Yes	No
Meets user needs		10
Accurate & up-to-date	7	3
Accessible to users	2	8
Reviewed regularly	9	1
Visible	4	6
Provides quick information	2	8
Well promoted	9	1
Accessible to Library staff	9	1
Close to enquiry desks	3	5
Complementary to Google	5	3
Effective use of space	6	3
Total	**56**	**49**

Model 7   Low IT / High print / High management

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Level of electronic information	←
Physical size of print reference collection	→
Focussed management of collection	→
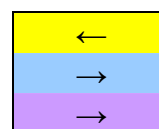
Advantages: high quality polished collection/ low cost
Disadvantages: staff time/ not 24/7 or for distance learners/ space issues/ large print = limited awareness/ does not meet user expectations

Criteria	Yes	No
Meets user needs	1	9
Accurate & up-to-date	6	4
Accessible to users	5	5
Reviewed regularly	9	1
Visible	8	2
Provides quick information	6	3
Well promoted	10	
Accessible to Library staff	8	2
Close to enquiry desks	2	8
Complementary to Google	4	5
Effective use of space	2	8
Total	**61**	**47**

Model 8   Low IT / High print / Low management

Level of electronic information	←
Physical size of print reference collection	→
Focussed management of collection	←
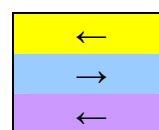
Advantages: Low cost
Disadvantages: staff time/ not 24/7 or for distance learners/ space issues/ less up to date/ large print = limited awareness/ does not meet user expectations/ low quality unpolished collection.

Criteria	Yes	No
Meets user needs		10
Accurate & up-to-date	1	9
Accessible to users		10
Reviewed regularly		10
Visible	6	4
Provides quick information	7	3
Well promoted		10
Accessible to Library staff	8	2
Close to enquiry desks	1	9
Complementary to Google	3	6
Effective use of space		10
Total	**26**	**83**