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EVIDENCE-BASED LIBRARIANSHIP AS A METHOD

I. Introduction

University libraries are challenged to demonstrate the impact of their services and collections on the scientific communities they serve. They are expected to improve their performance despite limited budgets and uncertainty. For this purpose they need methods. We argue that evidence-based librarianship (EBL) can offer simultaneously both a practical and a research-based approach to the development of library practice and services. EBL is a process where the best available evidence is combined with the insights derived from working experience, moderated by user needs and preferences, and integrated into decision-making. (Booth 2006b; Eldredge 2006.)

The concept of EBL was first introduced in 1997 by Jonathan Eldredge. The roots of evidence-based practice are in medical science. The term "evidence-based medicine" was used for the first time in 1991. (Bailey & McKibbin 2006.) As early as in 2000 Eldredge demonstrated how the characteristics of both evidence-based medicine (EBM) and evidence-based health care (EBHC) can be adapted to health science libraries (Eldredge 2000).

Nowadays EBL has spread to all library sectors. The first Evidence Based Library and Information Practice Conference was organized in Sheffield, United Kingdom in 2001. Thereafter EBL conferences have taken place every second year, the most recent in 2011 in Salford, Greater Manchester United Kingdom (see <http://www.eblip6.salford.ac.uk/>). The journal *Evidence Based Library and Information Practice* (<http://ejournals.library.ualberta.ca/index.php/EBLIP/index>) has been published since 2006 and has included articles from all library sectors including university, public, school and special libraries. As Ryan (2012, 5) states: “EBLIP is one area where librarians from every sector can work together, sharing a common interest in evidence based professional practice.”

Although EBL as a concept is quite new, university libraries have based their activities on very similar methods for years and have also compiled research-based evidence to support their decision-making. However, they have not communicated and shared this endeavour very well. Probably this inability to communicate has led to the misunderstanding and suspicions that libraries do not use research-based evidence in their decision-making. For example, Neal (2006, 1) argues: “It is imperative that academic librarians and higher education libraries develop and carry out systematic research and development program.” He continues: “Other organizations in the not-for-profit sector, including libraries have not advanced an R&D capacity or commitment. This needs to change.” Of course there are various barriers facing EBL in everyday life in the libraries but there are also various means to overcome them (Booth 2011).

In this chapter we use four case studies to demonstrate how university libraries in two quite different countries have compiled and used solid evidence to support their decision-making. Two case studies (1 and 3) from Finland were designed and carried out as EBL case studies. Two others (2 and 4) are everyday life examples from Namibia. Although these cases were not started as EBL processes, they can also show how reliable and valid evidence was needed and

used in the decision-making in the library. In addition, they can also be analysed and described by following EBL principles.

2. The EBL process

As a process EBL is quite similar to the research process. It starts by defining and analysing problems or questions and continues by searching for and evaluating the evidence or data. In EBL, the available evidence is applied in decision-making and in scientific research in the creation of new knowledge. The evaluation is essential both in EBL and in research. In EBL, the whole process and change will be evaluated, and, if necessary, the problem will be redefined. (Bayley & McKibbin 2006; Booth 2006b.)

Understanding research methods, reading research publications and academic writing skills play a crucial role both in EBL and in scientific research. However, EBL is always related to library practice. Evidence has been sought and applied in the decision-making and development of library practice and services.

Relevant questions as a starting point

In EBL it is essential to construct a relevant, significant, focused and answerable question from practice. The questions and problems are practical and related to the library context. The questions indicate that there exists some degree of uncertainty, and in the library there is a need to work and collect evidence to be able to make a decision.

Booth (2006a) identifies three types of questions in the everyday-life of libraries. These types are prediction questions, intervention questions, and exploration questions. Prediction questions seek to predict outcomes under certain circumstances. Intervention questions

compare two or more actions in terms of “how successful?”. Exploration questions seek to answer the question “why?”.

Booth (2006b) presents a SPICE model for analysing the questions. In SPICE model attention is paid to:

- Setting (where? – the concrete library environment)
- Perspective (for whom – does it relate to all users or a certain group?)
- Intervention (what? – the service or activities)
- Comparison (compared with what, alternative service or action?)
- Evaluation (with what results?)

Evidence supports decisions

Reliable and valid evidence is needed to answer the questions and problems identified in library practice. EBL integrates user reported, librarian observed and research derived evidence (Partridge & Hallam 2005; Booth 2006b.) User reported and librarian observed evidence will offer the pragmatic perspective developed from working experiences. Research derived evidence will add to the quality and reliability of the evidence and may be produced from either quantitative or qualitative research.

Once the evidence has been gathered, it must be critically evaluated. Attention has to be paid both to the quality and usability of the evidence. (Bayley & McKibbon 2006.) Booth and Brice (cited here in Eldredge 2006) present a checklist for evaluating evidence. According to them, it is important to ask:

- is the study a close representation of the truth?
- are the results credible and repeatable?
- will the results help us in our own information practice/library?

Because the objective of EBL is to use the best available evidence to support the improvement of library practice and services, it is important that the evidence is applied in decision-making. The decisions are connected to the circumstances of a certain library. Therefore, in addition to research-based evidence, user preferences and actions, certain library circumstances and library experience must be taken into account (Bailey & McKibbon 2006). Further, the decisions should be implemented without a long delay. However, sometimes the evidence may support the decision that there is no need to change the current course of action.

3. Four case studies

Case study I.

Continuing with the Big Deals of scientific e-journals

In the autumn 2011 Tampere University Library, like many other university libraries in Finland, faced a difficult budget situation when the costs of scientific e-journals rose more than did the acquisitions budget of the library. The library had to decide whether to continue with the Big Deals of the commercial publishers (such as Elsevier, Springer, Wiley-Blackwell) in their e-journal subscriptions, or to move to the title-by-title subscriptions of scientific e-journals.

There was an intervention question: Should Tampere University Library order scientific e-journals title-by-title instead of continuing with the Big Deals of the commercial publishers?

The question was challenging because in the library both budgetary limitations and the availability of the most important scientific journals had to be taken into account.

The question was analysed using SPICE model in the following way:

Setting: Tampere University Library

Perspective: that of the financiers of the library and the library users (researchers)

Intervention: subscribing to scientific e-journals title-by-title

Comparison: with Big Deals

Evaluation: in terms of the availability of the most important scientific e-journals at reasonable prices.

The next step was to compile evidence for use in decision-making. Although there are some articles related to the benefits and shortcomings of Big Deals (see e.g. Frazier 2001; Duranceau 2004; Pickett 2011), it was obvious that additional local evidence from the practice of Tampere University Library was needed.

It was decided to analyse the use of two Big Deals (packages A and B). The statistics of the use of e-journals title-by-title offered evidence on the use made of e-journals and the researchers' preferences. The most used scientific journals in packages A and B were identified. It was decided that e-journals were heavily used at the University of Tampere if their articles were loaded at least 50 times in a year. Further, the joint prices for the most used e-journals in package A and in package B were calculated and the joint prices were compared with the prices of Big Deals.

It was found that both Big Deals (packages A and B) covered e-journals which were heavily used at the University of Tampere. Further, it was discovered that, in spite of their high prices, the Big Deals cost less than ordering the most used journals title-by-title. These findings were introduced to the top level of the University for budget negotiations.

It was important to compile evidence on the use and the prices of the e-journals included in the Big Deals. It was also necessary to evaluate the evidence and consider the quality of the data. One limitation might be the definition of the most used e-journals. However,

this definition was made taking into account the implications of the decision for local practice.

The decision was to continue with the Big Deals for the present. However, there is a need to carefully monitor the changes both in the use of e-journals and the prices of Big Deals.

Case study 2.

A computing network system to support students' learning

The server supporting student access to information, learning and study resources at the University of Namibia (UNAM) Library crashed in November 2006. The majority of students at UNAM are totally dependent on the library ICT network for learning and study support. The library did not have extra computer facilities where students could write and print or use emails. Not did it have wireless access to enable students to access the library e-resources with their own laptops. Repairing the server was given priority but maintenance experts from South Africa could not solve the problem. Tensions built up between the library and the students. Some students expressed their disappointment through open letters to the local newspapers, tarnishing the image of the library and the whole university. In March 2007, the Student Representative Council demanded that the library management solve the problem, which was deleterious to the students' learning outcomes. A quick but lasting solution to this problem was needed.

UNAM ICT technicians very quickly confirmed that the server hosting student computing network services was damaged beyond repair. More than half of the workstations were totally out of commission. The library did not have funds in its budget to buy a new server and computer workstations immediately. There were three questions: (1) Would a thin-client solution satisfy student ICT access needs or

should the library continue with fat-client? (2) How can the library guarantee timely maintenance of the new ICT network solution? (3) Will the maintenance expertise for the hardware and software of the new solution be available locally?

These questions were challenging because the library could not ignore the fast growing library technology and therefore could not simply replace the old with the new without considering new and emerging issues in library IT. The UNAM Library did not have a specialized ICT librarian in its employ to provide the needed advice. The library wanted to learn from its past mistakes as the previous ICT network did not have local maintenance support, but was sustained by experts flown in from South Africa to solve every problem that occurred. To ensure a sustainable library service to students required a functioning solution with backup support in the country.

The problem situation can be analysed with the SPICE model as follows:

Setting: University of Namibia Library

Perspective: that of students

Intervention: installing a new student computing network system

Comparison: with the old student computing network system where a network of 20 fat-client computers supported 8,000 students in word processing, copying their work to floppy disks and going elsewhere to pay and then print their work

Evaluation: in terms of the functional requirements of what the library wants the systems to perform, the features and usability desired.

The evidence to support the decision-making was compiled by testing. In testing both the librarians' and users' perceptions were needed and combined. A committee of experts from the computer center, the Library and the Students' Representative Council was established. It

analysed and tested the functional requirements at the warehouses of sales companies and also at institutions where they are installed and in use. Shortcomings were identified and used to strengthen the functional requirements.

The requirements were: maintenance and sustainability support, user authentication and UNAM based student email account, student usability – to be able to send and receive emails, Internet research, word processing and linking student payments at the finance department for printing and copying, all at one workstation.

It was necessary to test the requirements and criteria to ensure that the library could procure IT solutions appropriate for UNAM with training of library staff, backup and local maintenance support guaranteed by the supplying company. A submission outlining the problems, remedial solutions, final solution with financial implications was prepared and submitted to the Vice Chancellor's Management Committee, which provided the funding.

The procurement was thrown open to local suppliers' competitive bidding through the University's normal tendering procedure. The committee evaluated the offers on the basis of the functional requirements and criteria announced. The companies that met tender requirements were called in to set up their solutions at UNAM and to demonstrate to the Committee and interested persons how their solution would fulfill the students' computing requirements.

Finally, a decision was made to award the tender to a local company that demonstrated the ability to meet the functional requirements and library user based criteria, to deliver and install 150 thin-client workstations with a server on schedule and to train UNAM staff in their use at various intervals and provide a maintenance plan and support.

Case study 3. The use of library premises

During the last decade, each unit of Tampere University Library has moved to the new library building: the Department of Humanities and Education Library in 2003, the Main Library in 2006, and the Department of Health Sciences Library in 2009. At the same time the amount of e-resources has increased and the orders of printed journals diminished. Because the users have access to a huge amount of e-resources via the networks, many library users no longer need the library premises and do not visit the library but use e-resources and library services via the network.

Given the simultaneous change in desk service demand and the pressure to save on salary costs, it was important to ascertain why library premises are still needed and what library users do in the library.

First there were exploratory questions: Why do library users still come to the library? What do they do there? However, this question was soon reformulated to be posed as an intervention question: How should library premises and services on the spot be developed?

The question can be posed according to the SPICE model as follows:

Setting: Tampere University Main Library

Perspective: that of library users who physically visit the library

Intervention: developing on-the-spot library services

Comparison: present on-the-spot services

Evaluation: in terms of the use of equipment, library space and information services at the desk.

A lot of research derived evidence was available from the published literature on the use of library premises (see e.g. Rizzo 2002; Oyston 2003; Shill & Tonner 2003; Freeman 2005; Brindley 2006; Gayton

2008; Applegate 2009). Tampere University Library had several years' user-reported evidence related to users' assessments of library premises on the basis on regular surveys of the quality of services (Lehto & Toivonen & Iivonen 2012). However, more evidence on the use of library premises was needed.

Librarian observed evidence was acquired by the monitoring method through observation walks in the library (see e.g. Hoivik 2008). The activities of the customers were divided beforehand into a set of categories, and on regular observation tours of the public areas of the library the observers (library staff) noted on a standardized form the activity what each customer was doing. The monitoring tours were also learning processes for the staff and enhanced collaborative knowledge building and sharing in the library.

The results of monitoring have been reported in detail elsewhere (Lehto & Toivonen & Iivonen 2012; Lehto & Poteri & Iivonen & Matthew 2012). **The findings of the monitoring supported those of earlier studies:** the university library as a space is still important to library users. The users still come to the library although there are differences according to the days of the week and the time of the day.

Some concrete decisions were made on the basis of the evidence. Because there was evidence that only some users came to the library in the morning and that these people usually used the library independently without consulting the information desk, it was possible to make changes related to the information service available on the desk. It was decided that the services on the information desk would be available on the third floor of the library from noon instead from 10 a.m. This saved time and resources for other tasks and responsibilities. The service on the circulation desk on the first floor was still available from 10 a.m. to serve the users.

Further, it was found that library users increasingly used their own laptops in the library, the number of desks without computers but supplied with electrical sockets and wireless network was increased. In addition, it was noticed that the size of the most common group

was two people, while the group work rooms of the library were for bigger groups. The changes in the group work rooms are still under consideration at the time of writing. Some spatial changes in the library are called for.

Case study 4. **Integrating the collections of college libraries into the UNAM Library**

In 2009, the Namibian Government took a decision to transfer all four independent colleges of education to the University of Namibia. The colleges of education had been administered directly under the auspices of the Ministry of Education, but the education reforms recommended that they should be transferred to UNAM. In January 2010, the main UNAM Library was confronted with issues pertaining to college libraries without any background knowledge of the colleges and their academic programmes. The only information available was a Task Force Report of 2006/2007 by the Directorate of Library and Archives Service (NLAS) in the Ministry of Education. The report stated that not all college of education libraries met minimum education standards. They were poorly funded, their collections outdated and thinly spread across the curriculum. The college library collections were intended to support the Basic Education Teacher Diploma programme which was to be phased out and reinstated as a UNAM degree.

There was an intervention question: Can the inherited college library collections intended to support teaching and learning on the Diploma programme, be relevant to support teaching and learning on the newly introduced university degree or should the UNAM Library order new literature?

The question was challenging because the college library collections were transferred without any documentation of the content: what

they had and what the gaps were. The UNAM Library had to decide what to do with the inherited collections and provide meaningful and relevant information to support teaching and learning, research and studying on a curriculum that was constantly subjected to major changes. The college libraries were under-funded and did not have a budget for library resources. Many were managed by under-qualified staff. A further challenge was posed by distance. Three of the former college libraries were located far away (Rundu 900km, Katima Mulilo 1400km and Ongwediva 750km) from the UNAM Main Library. Travel costs had to be considered and procured to ensure onsite evaluation and later monitoring.

The question can be analysed by the SPICE model as follows:

Setting: four former college of education libraries at Rundu, Katima Mulilo, Ongwediva and Windhoek respectively.

Perspective: that of the new curriculum, students and lecturers

Intervention: access to e-journals and e-books already subscribed to by UNAM, new books specifically recommended to support the new curriculum

Comparison: the old collections

Evaluation: in terms of the requirements of the new curriculum.

The rich data was needed to support the decision-making. It was important to collect data on both the content of current collections and the new and changing curriculum they were intended to support and also on the needs and preferences of lecturers and students.

The next step was design a questionnaire for the library staff, lecturers, management and students at the former colleges to gain an understanding of the objectives and targets that this library was to meet. The questions were related to the strengths and weaknesses or gaps in the existing collections. A contrast between the contents of the collection and how it covered each subject on the curriculum was observed. This information was further contrasted with existing

UNAM eBooks and the e-journal collection immediately available to lecturers and students.

Data was collected through focus group interview surveys with college management (rectors, vice rectors, and heads of departments), lecturers, Students' Representative Councils (SRCs), and Library staff. The same standard interview guides were used to gather data from the sub-groups at different campuses throughout the study.

Data collected from interviews was strengthened by additional data collected from personal observations and physical inspection of library collections and usage. Personal visits and observations were also extended to the Centre for External Studies (CES) satellite libraries, and community libraries where these existed, with a view to establishing whether alternative reading and research materials, a quiet study environment and access to a broader range of information sources could be exploited for use by college students and staff.

The results of the survey revealed that almost 90 percent of the collections of former college libraries were obsolete. It was decided to weed them out from the UNAM Library. If there was a need for the discarded books elsewhere, they were donated.

The major part of the collections of college libraries did not meet the UNAM curriculum requirements. It was obvious that additional funding was needed to build up a new collection. The report on the findings of the library audit survey was presented at various merger committee meetings and a decision to provide additional funding to the UNAM Library to upgrade the dilapidated and outdated college library collections and turn them into information and learning resources for the academic community was made. However, it is essential that after a few years the relevance and appropriateness of the collections, and their ability to meet users' needs be reviewed.

4. Conclusions

Undoubtedly, university libraries have based the development of their practice and services on careful consideration and valid information for years. However, they could more systematically benefit from EBL and use it as a method in their decision-making. We believe that it would help them to keep library services up-to-date, valid and reliable in the rapidly changing environment. All our four case studies show how the evidence was used and how library services were developed (see Table 1). Although in case study 1 no changes were made, the level of the good availability of the important scientific e-journals was kept on the basis of the evidence.

There are also other benefits from the use of EBL. All four cases were definitely learning processes. In collecting evidence for decision-making, the libraries also learnt about their status quo.

These EBL processes also yielded updated, valid and evidence-based information on the resources and financial needs of the library for presentation to the top level of the university. As described in our case studies 1, 2 and 4, it was important to be able to reliably demonstrate the real reasons for the need for extra money for the library. The sponsors of the library are entitled to know how the library spends its money.

EBL can also serve as a basis for building a good partnership with the users. The users appreciate being asked to provide evidence and report on the level of library services. As our case study 2 indicates, when students were involved in the whole planning and implementation process of the new computing system to support students' learning, it helped the students to gain an understanding of the process and increased their respect for the library.

Inside the library, EBL empowers people. When the staff members are involved in the EBL process, they feel they have ownership of their work; they work together more effectively and they believe in what they are doing (see also Greenwood & Cleeve 2008). As our case

Table 1. Summary of four case studies

	Case 1	Case 2	Case 3	Case 4
Description/ Topic	Subscription of the scientific e-journals	Computing network system to support students' learning	Use of library premises	Collection development to support teacher education
Setting	Tampere University Library	University of Namibia Library	Tampere University Main Library	Former colleges of education libraries at Rundu, Katima Mulilo, Ongwediva and Windhoek
Perspective	the financiers and the users	students	the library users who physically visit the library	curriculum, students and lecturers
Intervention	subscription to scientific e-journals title-by-title	installing a new student computing network system	developing library services on the spot	access to e-journals and e-books already available, ordering new books
Comparison	continuation with Big Deals	the old students' computing network system	current services on the spot	old collections
Evaluation criteria	the availability of the most important scientific e-journals at reasonable prices	functional requirements and usability	the use of equipment, library space and information services on the desk.	the requirements of new curriculum
Data/ Methods	statistics of the use and prices	usability testing	monitoring	survey, focus group interviews and observation
Decision/ Change	library continued with the Big Deals	new student computing network system was procured and installed	service hours on the information desk were changed; the number of electrical sockets was increased	almost 90 percent of the old collection was weeded; the need for the additional funding for the collection development was presented to the top level of the university
Other benefits	learning; informing the top level of the university	learning; informing the top level of the university; building partnership with students	learning; collaborative knowledge building; empowering the staff of the library	learning; informing the top level of the university

study 3 indicates, when the librarian observed evidence was acquired by monitoring it also enhanced collaborative knowledge building and sharing in the library.

Although the goal of EBL is fundamentally to improve library practice and services in the context of a certain library, it is also important to share the experiences and results of EBL processes with other libraries. As Eldredge (2006) points out: "... even if these results are not dramatic or new, to build a more solid foundation to our knowledge base. Otherwise, we distort our understanding of reality by focusing only novel and dramatic research results." Therefore it is the library directors' duty to encourage and mentor the librarians to constantly collect evidence about their work, and to redirect the library's efforts to meaningfully support the user community and to remain relevant in the rapidly changing library environment; and, more importantly, to contribute actively to knowledge creation through research and publishing.

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