Evidence Based Library and Information Practice

Introduction to key concepts and principles

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ABSTRACT

Many library professionals excel in supporting their clients in their research activities, yet not all of them are good at undertaking research to improve their own library management practices. But research to support effective library decision making should become part of daily practice: to help library managers learn more about their work, to develop better services and to share ideas about best practice. It helps us build a body of professional knowledge that can benefit the entire profession.

The EBLIP-process aims at helping library professionals by working through the seperate stages of formulating the significant research questions, searching for the best available evidence to answer the questions, critically appraising the evidence, establishing the value of the anticipated benefits of the action plan that is developed, and reviewing and evaluating the effectiveness of that action plan.

The paper presents an introduction to the management approach of Evidence Based Library and Information Practice, its key concepts and principles. Evidence Based Library and Information Practice (EBLIP) is emerging as a key topic of discussion amongst many professionals in the library and information services sector, especially in the US, UK and Australia. In countries like Germany and other European countries EBLIP is still fairly unknown.

This paper paper is based on a workshop held by Prof. Gillian Hallam from Queensland Technology University (Brisbane, Australia) during the International Summer School at Stuttgart Media University in June 2008.

KEYWORDS: Evidence Based Library and Information Practice; Management; Research; Profession

1. HISTORY

Evidence-based practice is a concept that came up for the first time during the late 1990s in the field of medicine.
The idea behind "evidence-based medicine" or "evidence-based healthcare" was to have an approach to decision making in which the clinician uses the best evidence available, in consultation with the patient, to decide upon the option which would suit the patient best.
It soon became clear that the idea of evidence-based practice could be transferred to other fields of research. The key principle is that practice should always be based on up-to-date, valid and reliable research. This is a simple and general truth that allowed the concept to migrate to other disciplines and professions.

One of the first to recognize the potential of evidence-based practice for their own profession were librarians working in the health sector.
As information professionals, one of the most important tasks of librarians is to provide access to information for researchers and help them find what they need.
This is probably why librarians have played a significant role in the evidence-based movement right from the start, but the movement created new challenges for them, too.
In the process of evidence-based practice many clinicians became increasingly keen on accessing the evidence for themselves.
Librarians were forced to define their role and to leave behind the idea of acting as the gateway to information. Instead they had to face the fact that their profession required new skills like teaching information literacy in order to secure the quality of user-performed studies.
As a result, some librarians, especially in the United Kingdom, moved from a primarily supporting role to developing research-based search methods and conducting systematic reviews in their own right, which led to intensified collaborations of librarians working for national health technology assessment agencies (Booth & Brice, 2004).

2. "PROFESSION" AND "RESEARCH" - A SHORT DEFINITION

The terms "profession", "professionals" and "research" are often used in the field of evidence-based practice. To avoid misunderstandings, it is important to define these terms clearly.

Typical characteristics of a profession should be:
- A body of knowledge derived from research
- The Requirement for a tertiary qualification
- An acceptance of personal liability
- Commitment to ongoing professional development
- A code of ethics
- A certificate or licence to practice

Different aspects of research:
- originates with a question or a problem
- requires a clear articulation of a goal
- follows a specific plan of procedure
- usually divides the principal problem into more manageable sub-problems
- is guided by the specific research problem, question or hypothesis
- accepts certain critical assumptions
- requires the collection and interpretation of data in an attempt to resolve the problem which initiated the research

Defining the terms “profession” and “research” leads us to the next question: Why should librarians and other information specialists undertake research in professional practice?

One of the most important reasons might be that research is essential to maintain and improve our status as professionals. Improving our practice will enable us to keep up existing services on a high level and to meet new requirements at our work place. Continuing research is also fundamental to justify present funding or to demand further financial support from our institutions.

It is necessary to distinguish between quantitative and qualitative approaches to research.
Quantitative research methods, for example telephone interviews, are mostly broad but random samples that can be easily replicated. The results, which should be free from bias, are more general than in qualitative research.
On the other hand, qualitative research seeks to gain an in-depth understanding of human behaviour and the reasons which govern it. Qualitative research relies on smaller, focused samples and has a much more interpretative approach.
Examples for qualitative research techniques are questionnaires, face-to-face interviews, discussions in focus groups or observation.
The researcher becomes the main instrument through observing, asking questions and interacting with the research participants. The danger of qualitative research is that it can be more easily biased, for example when research participants are reacting differently because they are aware of being monitored.

3. WHAT IS EBLIP?

When Evidence Based Practice is used in librarianship, it is called Evidence Based Librarianship (EBL) or Evidence Based Library and Information Practice (EBLIP).

Andrew Booth from the University of Sheffield, who is one of the leading exponents of the evidence-based librarianship movement, defines EBL as "an approach to information science that promotes the collection, interpretation and integration of valid, important and applicable user-reported, librarian-observed, and research-derived evidence." (Booth, 2000)

The concept consists of five major stages:
1. Identification of a problem/Formulating a question.
2. Finding the best evidence to answer the question.
3. Appraising the evidence.
4. Applying the results to a specific population.
5. Evaluating performance and impact.

This approach should not only be used to find the best available evidence for our users. Librarians should also make it an explicit basis for their own decision making.
However, in reality it is often asserted that librarians do not use research for their profession. The question therefore is what librarians normally use as basis of their decision making process if not research? Do they really rely on little more than instinct or their colleagues' opinions? If this is the truth, the most important question is: why do librarians not use research although they should be specialists for identifying and retrieving the necessary information?

General reasons might include time constraints at work, problems with the physical availability of existing research literature or language barriers. Another difficulty in librarianship is the variety of disciplines within relevant information probably could be found: to cover all resources, research should not only be conducted in library science, but also in the social, behavioural, education or management sciences.

Besides, much of the literature in library science is not really research based. An analysis revealed that only 30% of health librarianship literature compromises actual research (Eldrege, 2004). Library literature in general seems to be dominated by best-practice or case studies. It is possible that research is being done, but the results are not prepared for publication.
Anyhow, the quality of publications is not good enough; a lot of the literature published lacks relevance. Practitioners do not want literature to be overly theoretical; they are looking for problem-solving information that can be applied easily to their workplace.
On the other hand, researchers prefer objective and verifiable data.
This results in a communication gap between practitioners and researchers because both of them seem to be reading and writing for different audiences.
A solution could be to support collaboration between the two groups, for example by creating common funding bodies to support collaborative research. Through ongoing communication between researchers and practitioners, a process of designing and implementing practical research question could be developed.

4. EBLIP - STEP BY STEP

To fully understand the advantages of EBLIP, let us have a closer look on the five steps.
1. Identification of a problem / Formulating of a question.

Before we can start doing research we have to know exactly what we are looking for. Identifying the problem and formulating the question are fundamental steps to evidence-based practice.
There might be a foreground question, but most of the times it is necessary to obtain some background information by formulating additional background questions. An initial question can lead to further questions. Depending on the question, different types of research designs are needed. Only effective question formulation will lead to efficient searching for the required evidence.

Questions can be categorized into three different groups:

- Prediction questions:
To predict an outcome under certain circumstances
Example: At what rate does the use of electronic resources grow per year?

- Intervention questions:
To compare different actions with respect to achievement of an intended goal or outcome
Example: Which electronic resources are most usable?

- Exploration questions:
To acquire some background knowledge, typically beginning with the word "why?"
Example: Why don't library patrons use the electronic resources offered to them?

A helpful tool for formulating the research question is the SPICE model, which was developed especially for information practice:

S	Setting – what is the context for the question?
P	Perspective – who are the (potential) users of the service?
I	Intervention – what is being done to/for them?
C	Comparison – what are your alternatives?
E	Evaluation – how will you measure whether the intervention has succeeded?

A fully worked out example for using SPICE has been described in an article by Cotter, Harije, Lewis and Tonnison (2006) The Central Coast Health Service (CCHS) Library in New South Wales, Australia, wanted to relaunch) their library intranet site because it was a service based on very poor evidence and had outgrown its original structure and purpose.
A project was started with the goal of producing a highly usable intranet site. The project was also an opportunity to explore evidence-based librarianship, and the SPICE model was used to refine the research question:

Setting:	CCHS Library intranet site
Perspective:	Staff and students of the organisation Gateway to our services & resources
Intervention:	Site improvements

Comparison: Original site
Evaluation: Usability (as a determiner of effectiveness)

As a result, the research question could be defined as: "How can the usability of the CCHS Library's intranet site be improved to enhance the site's effectiveness as a gateway to the Library's services and resources, for the staff and students of the organisation?"

2. Finding the best evidence to answer the question.

We already learned that our research should be based on the best evidence - but what exactly is evidence? And what is probably more important: where do we have to look for it?

Koufogiannakis and Crumley (2004) defined the six main domains of librarianship as followed: reference/enquiries, collections, information access and retrieval, education, management and marketing/promotion.
These domains again show that we cannot focus on library science literature alone, but have to explore outside the usual library databases.

Alison Winning (2004), information specialist for the NHS Trust Doncaster, recommends to proceed in a fixed structure of research in order to cover all relevant resources:

- LIS databases
- Non-LIS databases
- Electronic pre-print services
- Journals
- Web resources
- "Grey" literature
- Current awareness services

The three main databases for librarianship and information science literature are "Library and Information Science Abstracts" (LISA, www.csa.com), "Information Science and Technology Abstracts" (ISTA, www.infotoday.com/ISTA/) and "Library Literature and Information Science Index" (www.hwwilson.com).
LISA is probably the most popular database. It abstracts over 440 periodicals in more than 20 languages.

Non-LIS databases are of interest for researchers as well, depending on the research topic.
Relevant articles for health librarians may be found in MEDLINE (www.nlm.nih.gov/databases/databases_medline.html) or CINAHL (The Cumulative Index to Nursing and Allied Health Literature, www.cinahl.com). These databases are indexing major health librarianship journals like "Medical Reference Service Quarterly" or "Journal of the Medical Library Association".

"Current Awareness Abstracts", a service provided by "Emerald Management Reviews" (http://mustafa.emeraldinsight.com) provides abstracts from over 400 library and information management publications.
For education-related topics, Winning recommends the "Educational Resources Information Centre" (ERIC, www.askeric.org), which indexes around 30 relevant journals, whereas INSPEC (www.iee.org/Publish/INSPEC) might be useful for literature on information science.

Electronic pre-print services are a way to provide free access to literature even before it is published in a journal or added to a bibliographic database. Thus, problems of availability can be avoided. But it should also be taken into account that the literature might not always be of good quality because there is no editorial or peer review process. Electronic pre-print services are relatively new within LIS, there are no fully developed services for our field yet. "Documents in Information Science" (DoIS, http://dois.mimas.ac.uk) is a first step, but still under development.

To be informed (stay up to date?) about new developments and research in a specific field, it is important to keep up with the major journals.
Unfortunately, only a few of the LIS journals are freely available in full text on the internet. Access is often limited to subscribers.
Sites like Index Morganagus (http://sunsite.berkeley.edu/%7Eemorgan/morganagus/index.html) or BUBL (www.bubl.ac.uk) list current library and information science journals that are available in full text via the internet.

Web resources, on the other hand, are numerous but it can get difficult to overlook the flood of information they offer. Subject gateways like BUBL LINK (www.bubl.ac.uk) are helpful, because they are a good base for orientation. BUBL LINK is a catalogue of internet resources. It uses the Dewey Decimal Classification system as the primary organizational structure for its catalogue, which also indexes Library and Information Sciences amongst a wide range of other academic subjects.

Any material which is not commercially published is called grey literature. This includes for example conference proceedings or working papers. Within LIS, the majority of the grey literature is produced by academic departments and government organizations. These publications can be of great interest for researchers, but often they are not easily found as acquisition and indexing are limited.
Resources for searching grey literature are the "British Library Research and Innovation Centre Reports" (www.lic.gov.uk/publications/ricarchive/index.html) or the "Museums, Libraries and Archives Council" (www.mla.gov.uk/information/research/00resrch.asp).

Current awareness services such as Zetoc Alert (http://zetoc.mimas.ac.uk/index.html) offer the advantage of keeping you up-to-date about the contents of journals you have identified. Details of articles that match your search criteria are sent to you via email on a regular basis, which saves you the work of looking through every journal by yourself.

The examples mentioned are only a fragment of all the resources that could be used for research in the field of library and information science.
Unfortunately, access to these resources is expensive, which limits the number of professionals using them.

3. Appraising the evidence.

The process of weighing up individual research reports to decide whether they are reliable and appropriate to transfer into practice is the next step in the EBLIP process.

To identify a good research article, several factors should be considered (Booth & Brice, 2004).

First of all: interest. We cannot read every article in order to judge whether it really is of interest for us, but titles and abstracts can give us a hint. A good title or abstract gives some basic information about the article, which should enable us to recognise its relevance.

Next come extrinsic factors. We should ask ourselves: Who wrote this article? Have I heard of the author before? Where was it published?
These questions can be indicators for the quality of a publication.

Finally, for the intrinsic factors we focus on the content of a text and try to judge it by three aspects:

- Validity
  Question: Are the results of the research accurate and free from bias?
- Reliability
  Question: Are the results of the research thrustworthy? If you repeat the study, would similar results be obtained?
- Applicability
  Question: Do the results of the research make an impact on practice?

To determine the "best evidence" for the effectiveness of interventions, it can be useful to follow the different levels of an evidence prism.

The evidence prism has its origins in the field of medicine and tries to convey the hierarchy of evidence graphically:

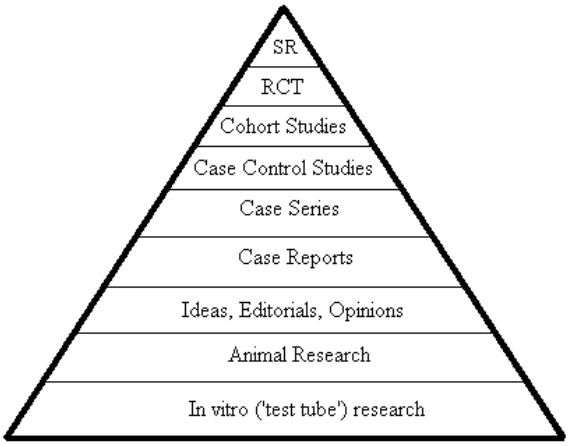

Figure 1: Evidence Prism

The next level would be to find a case report (or case study) by someone who actually tried what the researcher is planning to do and has already described it.
A case series, which means a collection of case reports, is even better, because it makes it possible to monitor an intervention over a longer time period and in numerous different settings.

Case-control studies are observational studies in which two groups are compared: one who has the issue of interest (the 'cases') with one who does not have it (the 'controls') but is otherwise similar.

The disadvantage of case-control studies is that their retrospective, non-randomized nature limits the conclusions that can be drawn from them.

A cohort study, on the other hand, is a form of longitudinal study which is more forward-looking (prospective). A cohort is a group of people who share a common characteristic or experience within a defined period. This group is compared to another group which is thought to have had little or no exposure to the issue of interest, but is otherwise similar.
The advantage of a cohort study is the collection of data in regular intervals over a long time. Unfortunately, cohort studies are expensive to conduct and take a long time to generate useful data.
Randomized controlled trials (RCT) are experimental studies. As the name suggests, different interventions are randomly allocated to subjects: some get the option of interest and others get another option.

Systematic reviews (SR) are regarded as the highest level of evidence because they go deeper than other kinds of research studies.
A systematic review is a literature review focused on a single question. The task is to find and appraise all relevant published and, if possible, unpublished literature on a topic.
Systematic reviews help keeping up-to-date on a special research topic and not being overwhelmed by the abundance of publications.

4. Applying the results to a specific population.

You have already searched for literature, you have found the best available evidence – so what can be done with your new knowledge? You will have to examine whether the evidence found is applicable to your specific situation.

Evidence can be applied on different levels:
- Evidence is directly applicable.
- Evidence enhances comprehension of the question.
- Evidence is indicative but not directly applicable. Local research for validation is needed.

Applicability depends on several factors (Koufogiannakis & Crumley, 2004):

User group:
Is the user group in the study comparable to the user group you are targeting?
Consider issues such as demographic factors, age/education/profession of the participants, the type/size of organization in which the study took place, preferences of your specific user group etc.

Timeliness:
Is the research recent enough or has the situation changed since the evidence was gathered?

Cost:
Do you have the necessary financial resources you will need to achieve a similar result? Are the potential benefits worth the cost? Are there cheaper ways to achieve a similar result?

Politics:
Will your initiative be accepted and supported within your institution?

Severity:
How critical is the implementation of this intervention?

5. Evaluating performance and impact.

The final step will be to evaluate your work. Many practitioners elide this last step, when they have found what they were looking for, but evaluating the performance helps summing up the results, identifying problems which occured in the process and will eventually make you a better evidence-based practitioner.

Ask yourself:
- Did you ask a specific focused question?
- Did you find efficiently the best evidence to answer your question?
- Did you evaluate the evidence reliably according to validity and usefulness?
- Did you apply the results of the research appropriately to a specific user or group of users?

To find out whether the intervention had the planned effect and the expected magnitude, it is necessary to evaluate the whole EBLIP process.

It is possible to evaluate the process yourself, by reflection-in-action, which means already reflecting the event during the process, or reflection-on-action, which means reviewing your practice after the event.
Both are simple ways to evaluate a process if the practitioner has the ability of self-criticism.
Other ways of individual reflection can be portfolios charting the personal and professional development or keeping diaries for recording key decisions, learning points or critical incidents during the process (Booth, 2004).

It can also be useful to get an objective opinion by working in a group with other professionals or with a mentor.

Evaluating the changes and results you received from using EBLIP allows you to summarize your achievements and perhaps present them to your work colleagues or superiors in order to convince them of the advantages of using professional research methods.

5. WHAT'S NEXT?

We have got an introduction to the process of Evidence Based Library and Information Practice but let's have a look on the next steps we can take.

We have learned that our decisions should be based on the best available evidence.
If your project turned out to be successful, you should think about sharing your knowledge with other professionals by publishing the details of your study.

One way to go public is by publishing articles in relevant journals. Rachel Singer Gordon, librarian author and editor, advices: "Publish, don't perish!" and gives tips on how to write articles and get them published on: http://info.emeraldinsight.com/librarians/writing/publish_index.htm

There is also an open access, peer reviewed journal devoted especially to Evidence Based Library and Information Practice. Since 2006 it is published quarterly by the University of Alberta Learning Services and can be found online: http://ejournals.library.ualberta.ca/index.php/EBLIP/

EBLIP publishes original research and commentary on the topic of evidence based library and information practice, as well as reviews of previously published research on a wide number of topics.

These reviews, also called evidence summaries, provide critical appraisal for selected research articles, which allows practitioners to judge their validity and reliabilty more easily.
The team responsible for the evidence summaries in the EBLIP journal consists of information professionals from Australia, Canada, New Zealand, the United Kingdom and the United States of America (Koufogiannakis, 2006).

Each evidence summary has the same structured abstract format. The main parts are:

Objective:	The objective of the study.
Design:	Type of research study design used.
Setting:	Environment in which the research took place.
Subject:	The number and characteristics of the subjects that participated in the study.
Methods:	A brief paragraph on the research methodology.
Main results:	The main outcome of the research study.
Conclusion:	The conclusion and practice implications for the research study.

The EBLIP journal also links to a service offered by the University Library of Newcastle, Australia - a collection of evidence summaries seperated in different categories:
- Collections
- Education
- Information Access and Retrieval
- Management
- Professional Issues
- Reference

http://www.newcastle.edu.au/service/library/gosford/ebl/toolkit/evidencesummaries.html

Besides publishing in LIS journals there are a lot of possibilities to help spreading the word about EBLIP and to promote a more research based work approach amongst practitioners: organzing your own workshops or presenting your studies on a conference are two of them.

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