Margaret Law
University of Alberta, Edmonton, Alberta

The systematic review: a potential tool for research-grounded library management

Abstract:
The systematic review process, as defined for the health sciences, is examined as a potential tool for integrating research into library management. Issues are identified concerning the management environment, the research and its application. Suggestions are made to modify the process to make it more suitable for the LIS field.

Résumé : Le processus de revue systématique, tel que défini par les sciences de la santé, est examiné comme un outil potentiel pour intégrer la recherche en gestion des bibliothèques. Des problèmes concernant l'environnement de gestion, la recherche et son application sont identifiés. Des suggestions sont faites pour modifier le processus afin de le rendre plus adapté au domaine de la BSI.

1. Introduction

There is a "complex, challenging and sometimes problematic relationship between management practice and the practice of management research" (MacLean and MacIntosh 2002, 383). Researchers themselves are aware of this, and "lament the fact that their work has so little impact on management practice" (Ford et al 2003, 46). The specific nature of the gap between research and practice, though, appears to be debatable, and there is no accurate measure of how widespread it is. Beer (2001, 58) states, "We know of no study that has asked executives to grade the usability of knowledge produced by academics", a question which is equally valid in the area of library management. Research findings may point the way to more effective ways of managing, new approaches to problem solving or innovative ways for a library to advance. In order for them to be useful, however, there needs to be a mechanism for finding and selecting appropriate research to inform management practice. This article evaluates whether the systematic review process, as it is defined in the health science disciplines, is a useful tool for making research accessible for informing library management, by decreasing the gap between research and practice.

2. Research and management practice

Research suggests that practice is often informed by what an individual knows or what they can find out quickly and easily. Davies (2004), describes opinion-based policy making, dependent on either "the selective use of for example, evidence (e.g. on single studies irrespective of quality) or on the untested view of individuals or groups, often inspired by ideological standpoints, prejudices or speculative conjecture" (3). This is problematic because it does not provide for the best informed decision-making. The challenge is to make a transition from an idiosyncratic approach to policy making and other management activities, to an approach that is grounded in research and uses the best evidence to support management decision-making.

The systematic review process, "a research article that identifies relevant studies, appraises their quality and summarizes their results using a scientific methodology"

(Khan et al 2003, 1), is currently popular in the health sciences as a critical factor in support of evidence-based practice. It is seen as an efficient and effective tool for keeping practitioners current without each of them having to find and read all of the new research relevant to their practice, and integrate this information with older research. The concept of evidence-based practice started in education and psychology and was enhanced and clarified as it moved into the health sciences. It is now moving into other fields, with the publication of systematic reviews in social work, library and information studies and criminal justice. It may also provide a mechanism for reviewing management research to support the daily work of the practicing manager, whether in libraries or other settings. Is it a useful process? Can it make the transition from one discipline to another? Would practitioners be willing or able to use it? As Altman (1999) notes, in reference to medicine, "evidence does not always support expectation, let alone hope" (37). The systematic review of evidence can provide as many questions as answers, and should not be regarded as a potential solution to all management problems. This article considers the advantages and challenges in adopting or adapting the systematic review process from the health sciences to research related to library management.

There are a number of library and information studies (LIS) questions being raised through the evidence-based librarianship movement. Evidence-based librarianship (EBL) is defined by The LINC Health Panel Research and Horizon Scanning Task Group and the School of Health and Related Research (ScHARR), University of Sheffield in the following conference description:

> In their day-to-day work health sciences librarians are continually confronted with making many practical decisions. Evidence-based librarianship offers a decision-making framework, which integrates the best available research evidence with individual expertise. By employing this framework and the higher levels of research evidence it promotes, health sciences librarians can be valued as scientific practitioners in their own right as well as contributors to an organisational culture of evidence based practice.

The evidence-based librarianship movement is an organized effort by LIS professionals to bring the rigorous use of research into their practice in order to ensure that the best evidence is being considered in decision-making.

In order to distinguish library management from other questions being considered within the EBL movement, this paper will use the following definition of management: "Management is the creative and systematic pursuit of practical results, including the result of more knowledge, by identifying and using available human and knowledge resources in a concerted and reinforcing way" (Fletcher 2002). A defining characteristic of library management is the attention to practical results, and includes the activities of planning, implementing, monitoring and evaluation; these activities are supported by tasks such as budgeting, policy creation and marketing. This is different from the specifics of service delivery generally addressed by evidence-based librarianship, such as collection development, bibliographic instruction and the provision of effective and accurate reference service.

3. Background

The application of the systematic review process to education was intended to "increase the accessibility of both the process and results of research" (Oakley 2002, 279). One writer critiqued traditional literature reviews in education as "discursive rampages through selected bits of literature the researcher happens to know about or can easily

reach on his or her bookshelves at the time." (Oakley 2002, 280). Similarly, Khan et al (2003, 1) introduced the topic of systematic reviews in medicine with the statement "Now a word of warning – the manner in which traditional reviews search for studies, collate evidence and generate inferences is often suspect." This is a recurring theme in the systematic review and evidence-based practice literature, and, if correct, suggests one of the problems in implementing research findings into practice. There has not, however, been any empirical research done to support or dispute such claims.

A survey of UK teachers (Everton et al 2002) found that most of the research cited by respondents as informing their practice was more than 10 years old, and that the use of practice was highly correlated with post graduate training. The majority of teachers lacked the skills to evaluate research findings, and gained most of their knowledge through in-service training. Other sources of information used to inform practice included official publications, books, television and other teachers. Over half the sample, 56.2%, reported that they read research journals (378) although it appears that this was not a major influence on their practice. Although the LIS research, for example Leckie et al, has examined this issue in many professions, there is no evidence of a similar study with LIS managers.

There are a number of critiques of evidence-based practice as it is used in education, some of which suggest potential issues for investigation in the practice of management. Bronwyn Davies (2003) suggests that the use of evidence-based practices propose an "unproblematic relationship" (98) between research and practice; she raises the question of which evidence should be the base for decision making and who should select it. She goes on to state that "evidence-based practice's preference for experimental evidence reveals either a naiveté about research or a hidden managerialist agenda" (100). In summary, she expresses the concern that the excessive reliance on research evidence for decision making "belies the complexity of professional work" (101). She seems to overstate the problem for the sake of argument, as the medical literature consistently refers to the role of the practitioner's knowledge and experience in integrating research findings into the treatment of any particular patient. This may represent, however, the culture of medicine which allows the practitioner a high level of individual authority in determining appropriate courses of action. In other settings, such as schools, universities or libraries, there may be greater reliance on policies generated from the top – this would require further study.

Philip Davies (2000) notes that systematic reviews allow the users of research to go beyond the limitations of any single study and to "discover the consistencies and variability in seemingly similar studies" (365). He also, however, points to the possibility of a gap between statistical significance and educational significance, i.e. research that is statistically significant may not be helpful in shedding light on the issue that is currently under discussion. This raises the question of the appropriateness of the hierarchy for evaluating the quality of research in systematic reviews, which focuses entirely on the methodology rather than other factors such as usefulness. As research rarely gives "clear and unambiguous evidence about the best way to achieve quite reasonable goals, evidence based education would involve integrating expertise with the best available evidence" (374). This is not unlike evidence-based medicine, however, which requires the practitioner to use the evidence as one factor in decision-making, combining it with experience and knowledge of the particular patient's situation.

Barratt (2003), in studying how organizations supported or frustrated the use of evidence-based practice in social work, noted a number of factors which may be transferable to the implementation of evidence-based practice of management. She quotes Sheldon & Chilvers identification of social work as an "oral rather than a knowledge-based culture…which results in staff valuing direct practice experience over, and often to the exclusion of, other forms of learning" (143). In other words, like many other workplaces, people with questions are likely to seek out colleagues for insight and perspective. This assumes that the criteria for a systematic review have excluded oral sources of information, and that 'knowledge-based' refers only to items in print. It is not clear from the hierarchy described by Khan et al (2003) how oral sources should be evaluated, an important consideration when considering, for example, the role of mentors in sharing management knowledge. In addition, she identifies that existing tenuous relationships between the research and service communities was exacerbated by the ongoing failure of researchers to make research "understandable and relevant" (143) for practitioners. Individual barriers included lack of motivation, lack of clarity about what constitutes evidence, and unsympathetic organizational culture, married with the fear that systematic reviews undermined professional practice. She notes the safety inherent in remaining "within the boundaries of existing practice and assumption" (148) rather than risking error, and that anxiety about new ways of working is fostered in organizations that demand certainty. Library administrators vary considerably in their flexibility and their ability to tolerate and manage ambiguity, which could lead to similar barriers to introducing new practices.

Jette et al (2003) in a study of physical therapists and their use of current best evidence to support decision-making noted some problems which provide some direction when considering whether this practice could be introduced into management. In particular, they noted the size and complexity of the research base and the poor access that many practitioners had to the research; organizational barriers including limited time; ineffective education resulting in lack of expertise and the "lack of authority to change practice" (800). This situation may be mirrored in libraries, particularly in situations where a significant portion of the operating policies are defined by either a public library board or a parent institution such as a university ; further study would be required to evaluate the flexibility of the management culture in different library organizations.

4. The systematic review and evidence-based practice

The most notable feature of a systematic review is the somewhat rigid and predefined method, which defines a specific feature process to provide "balanced inferences generated from the collated evidence" (Khan et al 2003, 1). This process is intended to remove the influence of personal bias on the part of the reviewer and to provide a replicable outcome.

The key features of a systematic review are:

1. an explicit research question with all terms clearly defined
2. transparency of methods used for comprehensive searching
3. clear definition and application of criteria for inclusion and assessing quality
4. independent reviewing by two or more reviewers to reduce bias
5. a clear statement of findings and application.

For a more detailed description of the process, see Evans & Benefield (2001) or Khan et al (2003).

One of the differences between a systematic review and many other academic or narrative reviews is "that the former are explicit about all of the above" (Evans & Benefield 2001, 529). Unlike other literature reviews, the systematic review requires that the researcher follows a linear and pre-defined structured approach to the literature and uses the specified protocol as an indicator of acceptable rigour. The criteria are predetermined, and it is intended that a second researcher (following the same procedure) will be able to replicate the findings. The consistent use of this set protocol is a significant factor in the acceptability of a systematic review in the health sciences. The participation of a second researcher is another of the essential features of a systematic review. The review itself is a quantitative method for summarizing and evaluating existing research. The purpose of a systematic review is to translate research into a form that is applicable and accessible to people wanting to use it as a component of evidence-based practice. It provides a synthesis of the research, and identifies areas where there is a variance.

There is a clearly defined hierarchy of study designs, in which levels are assigned to evidence based on the soundness of the design. Briefly, the hierarchy includes 4 categories of design, outlined here in order of preference; (see Khan et al 2003, 17).

I Experimental study: Randomized control trial (with concealed allocation)

II Experimental study without randomization
Observational study with control group: cohort study or case-control study

III Observational study without control group: Cross-sectional study; Before-and-after study; Case series

IV Case reports; Pathophysiological studies or bench research; Expert opinion or consensus.

When considering this hierarchy for use with research literature outside of the health sciences, it is useful to note that qualitative research, which is prevalent in both the LIS and the management fields, is not identified. In addition, there is no way to evaluate knowledge from sources other than published research, for example, knowledge that is transferred orally.

The relationship between a systematic review and evidence-based practice identifies the review as one of the factors contributing to good practice. It provides an assessment of the research and its quality. The practitioner must then determine the importance of the research to the question under consideration, and the relevance to the particular situation. Skill and experience are combined with the synthesized research to provide the best solution for the current problem.

Currently, the evidence-based approach to practice is taught in medical schools, and has become the 'gold standard' for integrating research into practice in a consistent way in the health sciences. The rationale for evidence-based medicine is "straightforward. The biomedical research enterprise is enormous and growing, yet the dissemination of research results into practice is slow and tortuous" (Norman 1999, 139). The systematic review, as a component of evidence-based medicine, is seen as a tool to simplify this dissemination. Could the application of this type of process to the discipline of management, and library management in particular, provide the same positive outcomes as in medicine? Is the systematic review a suitable method for assessing management research as it applies to libraries or other settings, and supporting its transition into practice?

5. The case study

In order to evaluate the applicability of this method to the practice of library management, a systematic review was conducted to evaluate whether a Masters Degree in Business Administration (MBA) resulted in greater success for librarians. The definition of "success" was deliberately left open-ended and undefined to allow for the greatest number of studies. Any definition of success in a research study was deemed to be acceptable, including higher salary, faster advancement through ranks or recognition through a performance management process. This was chosen as a typical question which might be considered by a manager in response to a number of situations, such as: should an MBA be considered as part of the hiring process? Should a library be prepared to financially support an employee wishing to get an MBA? Should a librarian asking for advice be counseled to pursue an MBA as part of their career development?

The question was chosen as representative of a situation that could readily occur as part of a manager's responsibilities. It has significance for an organization due to the legal obligations for bona fide job requirements and the cost of financial commitments for training and development. It was also intended to simplify the search by choosing a concept which is concrete, relatively easy to define and connected to normal management experience, and was developed in the expectation that some research actually existed on the topic.

A systematic review was conducted through a variety of electronic and print resources, using both keywords and thesaurus terms relevant to the subject. Due to the difficulty of finding sufficient evidence, the search was conducted in two ways: one looking for research connecting an MBA to success in any environment; the other looking for any research on librarians with MBAs.

The review found very little research of any kind about the impact of MBA studies on a librarian's success, a total of 12 articles, none of them conclusive. None of the studies found fall within Category I or Category II methodologies as defined by Khan et al (2003), as they are not experimental studies. Nonetheless, they are the best published evidence available for answering the question, and can be integrated into a managers experience and understanding of the field. This suggests that for the process to be useful in supporting research-grounded practice for library managers, the protocol would need to be expanded to include ways of evaluating other research methods, and personal sources of information such as peers and mentors, would be more appropriate. A systematic review of only the LIS literature, resulting in these 12 articles, which all fell into the category of observation or expert opinion, did very little to answer the question, although they would provide a manager with some different perspectives to consider. The second part of the review, looking at the potential relationships between MBA completion and success, regardless of work place, was more forthcoming, but raises a number of questions about how to best transfer research findings from one environment to another. For example, are there different cultural values in library organizations that might affect the acceptance of MBA studies? Does the high proportion of female workers in libraries create a different working culture? Does the placement of most libraries in the not-for-profit sector create a different environment for the application of skills learned as part of an MBA? Inferring application from the general management research literature to inform library management needs to be done with care, and suggests an area for future research.

6. The nature of evidence

The systematic review process clearly lays out a hierarchy of evidence, which demonstrates the high value placed on a positivist, quantitative research methodology. In the social sciences, however, where much of the research to support management practice is carried out, there is a wide variety of well-regarded research approaches, including qualitative research and case studies. These should not be regarded as less valuable form of research; the hierarchy should be redefined, perhaps as a continuum, in recognition of different research cultures. Few, if any, research projects in management would be appropriate for a randomized control trial; this should not be taken to mean that existing research is not valuable for informing practice.

As many routine library management practice questions are interdisciplinary, the search for evidence is made more complex by research cultures, indexing practices and publishing expectations that vary from discipline to discipline. The application of one evaluation hierarchy (particularly one that is designed for a biomedical research/practice culture) is not helpful in evaluating social science research. For example, the search for evidence of the impact of holding an MBA on the success of librarians involved reviewing literature in education, business, psychology, library and information studies and sociology. None of the articles reviewed met the requirements for Category I evidence, and due to their lack of randomization fall into the bottom part of Category II or lower, yet they were accepted by peers for publication in a wide variety of journals. Clearly, the categorization of research quality for a systematic review in the health sciences is not appropriate for management literature.

7. The nature of management research

A number of writers have commented on the difficulty of applying research to practice due to its lack of clear practical application. This assumes that the purpose of research is to inform practice directly, or that applied research is somehow more valuable than basic research.

A significant difference in the research literature of medicine and management is the degree of focus on practice. Medical research shows a significant direction towards the improvement of practice, one intervention at a time, and the replication of previous findings. In management, a newer discipline, there is still work in the development of theory, and the development of research agendas at the macro level. While this is essential to the establishment of the field, it is not necessarily useful for the practicing manager who is trying to make an implementation decision. Researchers themselves may argue that "their efforts should not be directed toward the mundane day-to-day events in a manager's life, but instead should be used to address long-term management challenges" (Ford et al 2003, 46). This assumes that there are two distinct categories of research and that day-to-day challenges in management practice do not have any relationship to larger questions or long term implications, a dramatic over-simplification of work in this area.

Even when appropriate research is found, it is not necessarily easy to interpret or to apply. Research is often "couched in highly abstract terms,…difficult for managers to recognize and apply to their situation" (McGuire 1986, 10). This statement makes an assumption about the need for a general application outcome when doing research. This is clearly not true for some types of research, such as theory development or case studies. McGuire goes on to say that "managers' affective reaction to research and its correspondence to their experience play a critical part in the decision to utilize research"

(6). This suggests that research findings should be written in a way that appeals to managers' sensibilities, and assumes that direct use by managers is the appropriate outcome for all research. This discussion would be better informed by a clearer understanding of the many purposes of research, particularly in social science contexts.

Medical research has been able to evaluate the impact of objectively defined interventions on a clearly defined population. Management research has struggled with the difficulty of clear and consistent definitions. For example, a recent study into High Performance Work Practices reflects the problem of inconsistent definition by stating that "with piecemeal studies dominating the literature, what is truly needed is research that addresses a comprehensive model" (Hunter 2004, 32). This reflects the difficulty in clearly defining the completion of an MBA in the case study. Are all MBAs created equal? Are all students and their achievements comparable? These are impossible to define, due to variations in universities, faculties and students, making the systematic review far more complex than the evaluation the impact of different doses of aspirin.

Research specifically to support library management is a subset of both the management and LIS research. While the research conducted by LIS practitioners has been described as "quite weak …and of pretty poor quality compared with practitioners in other disciplines" (Gorman 2004, 3), this is not supported by any evidence and is contradicted by empirical studies of library research (e.g. Koufogiannakis et al. 2004). There is no strong argument to support the adoption of evaluation criteria from other fields to evaluate LIS management research. The most useful criteria for any body of research would be those that reflect both the kinds of problems that arise in a particular field, and the appropriate research methodologies used to address them.

8. The nature of management practice

Management decisions, whether in libraries, information service settings or other locations, are generally made in dynamic environments. Managers suffer from information overload and need to constantly decide how to filter the volume of information available to them to find and use the relevant pieces. Given the time needed to conduct a systematic review, managers may conclude that by the time they find and evaluate the evidence, the situation will have changed and their work will not have influenced the outcome. This supports the development of a regular program of published systematic reviews in areas where there is useful research, so that at least some of the work may be done to support management decisions in a timely fashion.

The management environment, whether in libraries or other locations, may not be conducive to the direct application of research findings. This is a complex environment, and "the study of easily measured and controlled variables in quasi-experimental conditions…are of questionable relevance to real world situations" (McGuire 1986, 5). Some of these complexities represent differences in norms among organizations, which may lead to difficulties in determining the extent to which findings generated in one setting are relevant to another. This is no more difficult, however, than a manager's task of determining which of his or her past experiences can enlighten a current problem.

Even those managers who are inclined to seek evidence to support their work, and are able to do so, must balance their discoveries with the political realities of their situation, and the long term implications of their decisions. Even if they, themselves, understand the contribution of research to their practice, this may not be welcomed or appreciated by

others in their organizations, who often view decisions through the pragmatic view of what is considered to be "relevant, correct and feasible" (McGuire 1986, 8). A shift towards a culture of research-grounded management requires support from all levels of administration, and clearly demonstrable returns on the investment in training, access to information resources and time.

It is clear that not all management research is meant to improve practice. For the research that is intended to change behaviour, however, there is still a question of applicability. "Few management scholars specify the conditions and processes that managers might use to implement their theories, concepts and methods" (Beer 2001, 59). Research tends not to incorporate a wide range of organizational and human factors, and researchers often choose research methods that are not replicable in the workplace. In order to identify relevant factors and draw valid and reliable conclusions, it is often necessary to control some parts of the research environment. Results gained this way can still be used to inform research-grounded practice when combined with a manager's experience and training although they are not intended to be adopted as specific guidelines.

9. The research/practice link

Is it appropriate to seek research input to answer the types of questions that are raised by the practice of library management? When compared with a medical research question, there are a number of difficulties with stating questions with the precision required to conduct systematic reviews of the literature. To use the concept of an MBA and librarian success as an example, it is possible to objectively state whether a person has been awarded an MBA or not. This does not, however, identify whether they attended an excellent, good or merely adequate business school, nor does it identify the particulars of their course of study, or their success as a student. Even a transcript does not lead to an understanding of whether the student is able to alter their behaviour as a result of their learning, or apply it to a variety of situations. Contrast this with a dose of aspirin, which can be consistently and objectively described and monitored for compliance.

The research papers found as part of this case study failed to consistently report details of the research methods, which created difficulties in the evaluation phase of the systematic review. Again, this reflects the research traditions in the management discipline, which appear to be similar to those in education and library and information studies. Compare this with the structured abstract, now commonly used in the health sciences, which summarizes all of the important components of research. These abstracts includes: context, objectives, design, setting, patients, main outcome measures, results and conclusion (e.g. Terry et al. 2004). This is not to suggest that the structured abstract be adopted without revisions, but that this can be used as a framework to guide authors to ensure that the most significant features of an article be identified. This would considerably simplify the search and evaluation steps of a systematic review.

A number of writers have commented on the language used in reporting research, including Kelemen & Bansal (2002), who state that "academic research is written in a style that tends to alienate most practitioners" (97). What is interesting about this is the assumption that the problem is with the research; perhaps it is the practitioners who need better skill in defining their problems specifically, and reading and evaluating appropriate writing. This also creates an opportunity for information brokers or librarians to translate research into practical guidelines.

One of the problems in adopting the systematic review process as it is defined in the health sciences is the difficulty in conducting this level of research. Although the growth in electronic resources has increased options for literature searching, it is still a process which requires a substantial level of skill, particularly in searching outside of the mainstream literature. As identified previously, many of the resources that are required to inform a management question (given its inherently interdisciplinary nature) are not consistently organized. Although many librarians have training in this kind of searching, it is a skill that needs constant practice and renewal in order to adapt to the changing information environment. The development and maintenance of searching skills requires a high level of motivation, which has been questioned by some writers. Gorman (2004), a harsh critic of librarians' activities, notes that "most librarians, unfortunately, are notoriously parochial in their outlook and remarkably research-shy" (2). Again, he provides no evidence for his assertion nor does he identify research practices in other disciplines, and the current level of energy committed to evidence-based librarianship directly contradicts this statement. Koufogiannakis et al, (2004) reviewed LIS literature published in 2001 and found that of the articles reviewed, 30.3% or 807 articles were classified as research (227). Of these, 135 or about 16.7% were focused on library management issues.

It is not clear whether library managers have been trained in research-grounded practice. Further research into the curricula of library management courses, for example, would determine the extent to which the use of original research is encouraged to either support learning or to support practice. A review by Schrader (2003) indicates that all of the accredited graduate library programs in Canada have a mandatory research methods course; the question remains, however, about the extent to which these are focused on using research to support practice rather than on conducting research. It is clear that both activities are linked, as the skills required to conduct research are the same ones that are essential to evaluate it for application to practice.

Even librarians who have pursued further training in management, perhaps by completion of an MBA, are unlikely to be in a better position regarding the use of research to inform their management practice. In 1994, Hawes identified the problem of the lack of training in information literacy in business schools. No current research shows that this has substantially changed in the last decade. There is also an opportunity to establish whether library managers, with their professional training in organizing and accessing information, are more highly skilled than other managers at finding and utilizing appropriate information.

The time commitment required for a systematic review puts it outside of the reach of many, if not most, practicing library managers. In the review of the literature described here, to establish a link between MBA and librarian success, it took approximately 77 hours to complete the original database searching, without any analysis of the findings. This is still considerably less than is estimated to complete a systematic review in the health sciences. As stated by Lipp (2003, 2), "it has been estimated that approximately 1139 hours, or about 30 person-weeks of fulltime work are required to complete a systematic review, depending on the number of citations." This is a longer time commitment than a traditional literature review, largely due to the need for a priori development of criteria and the precise application of the protocol and the need to ensure that the search has been comprehensive, including hand searching selected journals. There is an additional time commitment required by a second researcher, a fundamental

component of the health sciences systematic review. Arguably, this is a reasonable resource commitment for a significant question, or one with a major penalty for error, but it would be impossible to dedicate this amount of time to every decision that was needed. To decide when to conduct a research review, however, a manager would need to be able to predict the future well enough to determine which questions will turn out to have been significant.

10. The research literature

Finally, there is also a practical problem that limits the use of systematic reviews to inform management practice: not all library managers have access to the breadth and depth of information required. There is limited access by practicing librarians to research literature, particularly those who are not employed by universities, or who are employed by universities that do not offer a library and information studies program. One can assume that if librarians do not have access to sufficient information resources to do this kind of thorough search, it is even more unlikely that other managers will have this access.

Even if access to the literature is guaranteed, there are differences in the way that research is presented through the publication process. A search of medical literature in MedLine, for example, is supported with a complex structure of subject headings, allowing for efficient search of the database and an ability to filter by the type of research methodology. Compare this with a search in Educational Research Abstracts Online; without a controlled vocabulary, the searcher is left to look as widely as possible in hopes of finding the correct phrase to use as a search term. The movement in health science journals to use a structured abstract in order to improve the accessibility of research has simplified the search process. The regular publication of systematic reviews in the health sciences literature has synthesized a large body of research for practitioners and the systematic review has become recognized and valued as a research method.

Systematic reviews are only one factor that supports evidence-based practice. The manager as a practitioner must consider the other factors that are involved, including their own judgment and experience. Just as Davies (2004) argues that "a broader conception of evidence is used by most governments than by some academics" (1), it is necessary to define the most appropriate levels of evidence for use in the library management environment. In particular, additional work is required in developing alternative criteria for evaluating evidence in a body of research that recognizes many methodologies and comes from multiple disciplines.

11. Conclusion

There are a number of issues, related to both the nature and organization of the literature and the time and skill required to do a systematic review, that are raised by the question of whether the process is useful as part of research-grounded library management. The debate is sure to continue. There are a number of barriers to the straightforward adoption of the systematic review process, including access to appropriate resources, the time and skill needed to review research and uncertainty about the acceptance of research-grounded management practice. In addition, there are a number of unanswered questions about the actual nature of library management and the appropriate link with research, for example "management in action is complex, cause and effect relationships are difficult to establish and the predictive validity of theory is low" (Starkey & Madan 2001, S8).

There are may be areas of management however, that more readily lend themselves to a solid grounding in research, but these need to be clearly evaluated and defined.

But does that mean that the idea should be abandoned? No. Library managers still need to find ways to improve the quality of their professional judgments and keep themselves informed about new research in their areas of work. The adoption of evidence-based medicine, for example, is an ongoing process that continues to take time to infiltrate all areas of medical practice, and is also now spreading into other areas of health care. Management practice is in a position to learn from this process and to modify it to suit its particular needs. The adoption of research-grounded management practice requires a better understanding of the nature of the evidence available and an appropriate adaptation of the review process, rather than the simple adoption of a protocol from a different discipline.

Even without immediate applicability to daily practice, research can "signal to where important tensions lie" (Huxham 2004, 46). By being exposed to research, library managers will develop a broader understanding of the world in which they work, and enhance their perspective to support reflection on their practice. Since accessing and evaluating original research is a time-consuming process requiring a high level of skill, the development of an appropriate method for reviewing work done in the library management environment, along with the routine publication of such reviews will provide the interested reader with a basis for improved practice.

The systematic review process must be adapted to make it more appropriate for addressing questions of library management. This must include not only the development of more appropriate criteria for the finding and evaluating of information, but also an understanding of the management context and the potential for research application. Definition of the skills needed to review research would provide a basis for an evaluation of the distribution of these skills among practicing library managers, and of the development of these skills in library training. This would include an evaluation of the acceptance of the value of research in informing library management practice.

An evaluation of the practice of research use in library management classes, or all graduate level management training, would also provide insight into the behaviour of practicing managers. Attention must be paid to a number of key issues including determining which questions are suitable for this kind of time investment, the skills that are required, and identification of and access to the relevant sources of information. This would support the ongoing development of a culture of management practice grounded in research.

Library managers also need motivation to change their practices, if change is required. "The evidence on how to get research into practice repeatedly shows that practitioners need incentives to use evidence and to do things that have been shown to be effective" (Davies 2004, 20). This requires a change in the management practice of their supervisors, who may themselves not have adopted a research-grounded philosophy, or know how to change human behaviour.

So what is the ideal that we should be working towards? To support research-grounded practice in library management, it is essential to both contribute to and demand a broad base of sound research to support professional judgment and to contribute to well-informed decisions. Without the development of a culture of research use to inform

practice and widespread development of the skills required to use research evidence, it is "difficult to see how a strong demand for research evidence can be established, and hence, how getting research into practice can be enhanced" (Davies 2004, 18). Both the authors and the users of research need to work together towards making it available for use, and ensuring the skills necessary for transformation of research into practice.

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