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Communication of research to practice in library and information science: Closing the gap

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Abstract

A widely held concern in library and information science (LIS) is that the relationship between research and practice, and particularly the communication of research to practice, is flawed. Through critical analysis of the literature, the authors examine the nature of the gap between research and practice, strategies to reduce the gap, and research on the effectiveness of the strategies. Eleven types of gap are identified: knowledge, culture, motivation, relevance, immediacy, publication, reading, terminology, activity, education, and temporal. Strategies proposed in the literature emphasize ways to increase practitioner research activity and to close the publications gap. Only one of the proposed strategies, inclusion of research reports in practitioner publications, is supported by research. The authors propose further research to evaluate this and other strategies based on recognition of a wider range of channels for communication of research to practice and the role of intermediaries between researchers and practitioners.

1. Introduction

Research and practice, at least in theory, enjoy a mutually beneficial relationship. Research should inform practice and contribute to the development of theory. Practice should benefit from research findings (particularly where those findings go towards

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improving the product or service provided by practitioners) and raise more questions for research. Effective interaction between research and practice will produce a strong theoretical framework within which a practitioner community can develop and thrive. Nonetheless, a common concern in many professional fields, including nursing (Camiah, 1997; Stetler, 2001), psychology (Latham, 2001), information systems (Senn, 1998), and library and information science (Robbins, 1990; Rochester, 1999), is that practice does not benefit from research because communication between research and practice is flawed. This article presents, through a critical review of the literature, an analysis of the communication of research to practice in library and information science (LIS). There are two goals: to better understand the nature of the communication of research to practice, and to identify actions that might be taken to improve it.

2. The gap hypothesis

Concern about flaws in communication between research and practice is a recurring theme in the LIS literature. Over 25 years ago, Maguire (1975) observed that "librarianship as a discipline has obviously not sufficiently addressed the problem of diffusion and application of the results of research" (p. 293). Despite subsequent attention to this problem (e.g., Blick, 1984; Clayton, 1992; Exon, 1986; Harbo, 1986; Stephenson, 1990), dissatisfaction with the quality of communication between research and practice remains, as illustrated in recent publications, discussion lists, and conference papers. Powell, Baker, and Mika (2002) surveyed members of the main professional associations for library practitioners in North America (the American Society for Information Science and Technology [ASIST], the Medical Library Association [MLA], the American Library Association [ALA], and the Special Libraries Association [SLA]). Although the survey sample included researchers as well as practitioner members of the associations, the investigators doubted that the level of reported research activity (including reading, applying, and conducting research) was adequate. They concluded: "LIS professionals of all types, the agencies responsible for educating them, and their employing organizations must give more attention to this critical activity" (p. 71). In 2000, the professional association for library and information workers in Australia (the Australian Library and Information Association [ALIA]) held a seminar to address the problem (ALIA Board of Education, 2000). During March 2002, it was discussed on the Association for Library and Information Science Educators' (ALISE) JESSE listserv. In her presentation to the IFLA conference, Turner (2002, http://www.ifla.org/IV/ifla68/papers/009-118e.pdf) claimed that there is not just a gap between research and practice in LIS, but a "communication chasm."

Analysis of the literature that discusses the gap identifies 11 forms that the gap may take: a knowledge gap, a cultural gap, a motivation gap, a relevance gap, an immediacy gap, a publication gap, a reading gap, a terminology gap, an activity gap, an education gap, and a temporal gap. These gaps are summarized in Table 1 and discussed in more detail below.

Table 1
Eleven gaps between practice and research

Knowledge gap	Both researchers and practitioners would be more informed if there were more effective communication between them.
Culture gap	Researchers and practitioners fail to understand each other, respect different types of work, gain new knowledge from different processes, and communicate only within their own peer group.
Motivation gap	Practitioners are not interested in research.
Relevance gap	Researchers and practitioners value investigation of different types of problem.
Immediacy gap	Practitioners' problems need solutions more quickly than academic research problems.
Publication gap	There is relatively little research publication in the field, and little of it is written by practitioners.
Reading gap	Researchers and practitioners do not read each others' literature.
Terminology gap	Each group uses terminology that is not understood by the other. This is particularly true of researchers.
Activity gap	Few practitioners conduct research.
Education gap	Practitioners do not have the knowledge and skill to conduct research.
Temporal gap	Practitioners do not have time to read or do research.

2.1. Knowledge gap

A belief that is seldom made explicit underlies most, if not all, of the discussion of the gap between research and practice: research has the potential to provide practitioners with knowledge needed to improve their practice, but this potential is underutilized because researchers and practitioners do not communicate effectively (Ali, 1985; Clayton, 1992, Fisher, 1999; Maguire, 1975).

2.2. Culture gap

Lynam, Slater, and Walker (1982, p. 4) remarked on "an apparent lack of mutual understanding, even respect, between researcher and practitioner." Ashford (1985) noted a "reluctance to communicate outside a peer group" (p. 14). Robbins (1990) listed library practitioners' attitudes to research as a contributing factor: "service is over-valued" and practitioners' "knowledge base is developed from previous practice, authoritative pronouncement, and intuition" (p. 127).

2.3. Motivation gap

Practitioners have been criticized for their focus on operational or day-to-day information, and ignorance, or at best, a lack of interest in research (Blick, 1984; Lynam et al., 1982; Maguire, 1975; Rayward, 1983; Saracevic & Perk, 1973; Turner, 2002).

2.4. Relevance gap

Several writers describe a difference in what constitutes a 'problem' worth investigating in practice and research (Ashford, 1985; Clayton, 1992; Powell et al.,

2002; Robbins, 1990; Turner, 2002; Waldhart, 1975). Published research is "not relevant or practical enough" according to practitioners surveyed by Lynam et al. (1982, p. 57).

2.5. Immediacy gap

The time between identification of a problem and the need for a solution is very short in practice but longer in academic research (Ali, 1986; Clayton, 1992; Robbins, 1990).

2.6. Publication gap

The body of LIS research papers is small both in itself and as a proportion of the published literature (Feehan, Gragg, Havener, & Kester, 1987; Nour, 1985; Peritz, 1980). To some writers, the emphasis on pragmatic issues (Goodall, 1998; Montanelli & Mak, 1998, Rayward, 1983; Saracevic & Perk, 1973; Williamson, 1999) and the low proportion of practitioner authors relative to the number of practitioners in the field (Enger, Quirk, & Stewart, 1988; Fisher, 1999; Mularski, 1991; Olsgaard & Olsgaard, 1980; Stephenson, 1990; Swigger, 1985) are evidence that the relationship between research and practice is troubled and requiring attention.

2.7. Reading gap

Researchers and practitioners do not read each others' literature (Ali, 1986; Blick, 1984; Clayton, 1992; Robbins, 1990; Rochester, 1996).

2.8. Terminology gap

Terminology specific to the work of each group, and particularly researchers, may not be well understood by members of the other group (Powell et al., 2002; Robbins, 1990; Rochester, 1996, Waldhart, 1975).

2.9. Activity gap

Few practitioners conduct research (Harvey, 2001; Lynam et al., 1982; Powell et al., 2002; Robbins, 1990; Stephenson, 1990).

2.10. Education gap

There is a strong belief that practitioners do not have sufficient knowledge or skill to conduct research and that they should be educated to do so (Clayton, 1992; Dyer & Stern, 1990; Goodall, 1998; Harvey, 2001; Robbins, 1990; Stephenson, 1990).

2.11. Temporal gap

The effect of many of these factors is increased by the pressure on practitioners to complete their day-to-day operational work. They have limited time to read or to do research (Dyer & Stern, 1990; Goodall, 1998; Powell et al., 2002; Turner, 2002).

These gaps interact with one another, exacerbating the problem. For example, a practitioner with little time to seek research information (temporal gap) may find the terminology used in research papers inaccessible (terminology gap) and this barrier may act as a disincentive to read research again (motivation gap). For practitioners outside the major countries of research publication—the United States and Britain—the publication gap may be combined with others: problems researched in the United States and Britain may not be relevant or timely in other countries (Clayton, 1992).

Early research also identified ''information overload, and the accessibility of existing communication channels which report the results of research'' (Waldhart, 1975, p. 26) as causes of communication barriers between research and practice. If anything, the potential for information overload has increased since Waldhart's publication, in part due to the rapid growth of the Internet. On the other hand, the Internet has improved access to research information, bringing original publications to the user's desktop. Neither of these effects has, however, closed the gap between research and practice in LIS: if practitioners do not see research publications as relevant or timely, and do not have the time, interest, or knowledge to read them, the ready availability of more research publications will have no effect.

3. Proposed strategies for closing the gap

Existing proposals to reduce the gap between research and practice in LIS address two strategies. Most writers emphasize ways to increase practitioner involvement in research, while others suggest ways to improve the dissemination of research to practice.

3.1. Increase practitioner involvement in research

Proponents of the first strategy assume that the gap between research and practice can, and should, be reduced by increasing the amount of research that practitioners do and the number of research publications that practitioners read and write. The goal is therefore to develop a culture that nurtures and offers opportunities for research (ALIA Board of Education, 2000; Allen, 1986; Maguire, 1975; Rochester, 1997; Thelbridge, Nankivell, & Matthews, 2000). Suggested methods include: education in research methods; encouraging library practitioners to enroll in higher degree courses; giving practitioners time to conduct research; and reducing other barriers to research activities in the workplace (Dyer & Stern, 1990; Goodall, 1998; Rochester, 1997; Thelbridge et al., 2000; Todd, 1999; Williamson, 1999).

3.2. Improve communication of research to practice

Proponents of the second strategy note that, because most research reports are written by specialists for specialists, research is not immediately accessible to practitioners—both in terms of the journals in which it is published (reading gap) and the technical language used (terminology gap). The proposed remedies encourage researchers or intermediaries to write publications that are accessible to practitioners.

The most common recommendation is to include short pieces about research in newsletters (Irons Walch, 1993; Turner, 2002; Waldhart, 1975). Other authors suggest that published research would be more accessible to practitioners if guidelines or summaries written specifically for practitioners were included in research publications (Turner, 2002). Some business research journals have adopted this approach; for example, *MIS Quarterly* carries a half to one page summary of each research article it publishes, written in language accessible to the practitioner and with an emphasis on application of the research in practice.

Another recommendation is that LIS practitioners adopt evidence-based practice (Bayley, 2001; Booth, 2002; Eldredge, 2000; Rochester, 1999), a common approach in medicine, nursing, and other health sciences (Centre for Evidence-Based Medicine, 2001; Joanna Briggs Institute for Evidence Based Nursing and Midwifery, 2001; Sackett, Richardson, Rosenberg, & Haynes, 1997). This approach acknowledges the difficulties that busy practitioners have keeping up to date with research, as well as the difficulty of comprehending and evaluating research papers. Research studies on a specific topic are gathered and their results synthesized to arrive at findings that reflect the body of research. These findings are then condensed and published for practitioners (see, for example, the Web sites of the NHS Centre for Reviews and Dissemination, the Joanna Briggs Institute, and journals such as *Evidence Based Nursing* and *ACP Journal Club*). It is assumed that practitioners, identifying the need for research-based knowledge and information, will read these publications on a regular basis or in response to a specific need.

4. Evaluating strategies for closing the gap

There is little published research on the effectiveness of proposed strategies for improving communication of research to practice in LIS. Some inferences can be drawn, however, from the findings of bibliometric analyses of LIS literature (e.g., Craghill & Wilson, 1987; Fisher, 1999; Van Fleet, 1993), and surveys of practitioner research and information seeking behavior (e.g., Lynam et al., 1982; Powell et al., 2002; Turner, 2002).

4.1. Increase practitioner involvement in research

The argument that practitioners should receive formal education in research methods is based on the assumption that practitioners who are exposed to learning about research in an environment in which it is understood, appreciated, and valued, will go on to contribute more

research themselves. Yet, the evidence suggests that this is not the case. Stephenson (1990), seeking to explain why practitioners conducted little research, observed that most practitioners completed a course in research methods as part of their LIS education. Powell et al. (2002) "were surprised to find that respondents' perception of how well their master's degree program had prepared them to conduct research was not statistically related to how often they do research" (p. 70).

With some reflection, these results should not be so surprising. Increasing knowledge and skills through research education (addressing the education gap) does not deal with other reasons why practitioners do not conduct research. In particular, it does not address the need for time to complete research and write it up for publication (temporal gap). Neither does it appear to address the motivation gap. When Turner (2002) asked library practitioners about strategies they thought would improve the relationship between research and practice, the lowest ranked strategy was "encouraging intended research consumers to participate in the research process" (p. 9).

4.2. Improve communication of research to practice

Researchers and practitioners have different communication processes (McNaul, 1972). Perceived shortcomings in the communication of research results to practitioners in LIS may, therefore, reflect differences in the communication practices of each group. If so, strategies that provide research information to practitioners in forms consistent with their communication practices are likely to be more effective than those that assume that practitioners will change their practices.

Practitioners may read research reports published in the practitioner journals and newsletters that they read as a matter of course. Ali (1985, 1986) asked practitioners about their preferences for different research information and dissemination channels, such as publications, conferences, and informal communication. The preferred source of information was "popular journals" such as *Library Association Record* and *American Libraries*. Several other studies of practitioner information seeking behavior confirm that practitioners read journals and newsletters written for them (Haddow, 2001; Lynam et al., 1982), but no research is available to confirm that they read research reports included in these publications.

An alternative strategy is to publish "practical guidelines for applying results" of research (Turner, 2002). This was the most highly ranked strategy in Turner's survey of practitioner preferences for finding out about research, so it is appealing to practitioners. Furthermore, the two approaches to this strategy have been successful in other fields (publication of practitioner guidelines for each article published in *MIS Quarterly* and evidence-based practice in health care). There is, however, no direct evidence that practitioners will read practitioner guidelines included in LIS research publications; it is known that few practitioners read research publications in their current form, so this approach would work only if practitioners were sufficiently motivated by the availability of the guidelines to change their reading practices. Similarly, evidence-based librarianship is still in its formative stages and it is not clear if this approach will be effective. Other forms of practitioner-specific research publication are not widely read (Haddow, 2001; Klobas & Clyde, 1990; Lynam et al., 1982; Williams, McConnell,

& Wilson, 1997). While there are compelling organizational and duty of care forces that encourage health professionals to adopt evidence-based practice, LIS practitioners do not have such a strong external motivation.

Research may be communicated to practice by means other than publications. Craghill and Wilson (1987) tracked the effect of research on subsequent activities. They described how three specific research themes studied in the Department of Information Studies at Sheffield University were utilized in later research or practice, a process the researchers described as "impact." In addition to interviews with 40 researchers, they used citation analyses to track use of publications about the research themes, and sent questionnaires to schools of library and information science in the United Kingdom to gather information about the impact of the research themes in their environments. Craghill and Wilson found that impact could be seen in "changes in or contributions to . . . attitudes, opinions, and ways of thinking about practice, teaching and research" (p. 72). They concluded by remarking on the diverse ways in which research is communicated and the mistake of judging the effectiveness of communication by using publications criteria (p. 71).

Studies of practitioner information seeking behavior have examined different ways that research may be communicated to practice. In a typical study, Lynam et al. (1982) asked 854 LIS workers in the United Kingdom about the activities and sources that were important to them when seeking information about research. While the respondents reported reading journals and newsletters, attending professional group activities, conferences, meetings, seminars and workshops, they rarely did so to find out about research. The practitioners reported that the most common way to find out about research was through informal communication with colleagues, researchers, and friends.

5. Toward a broader framework for communication from research to practice

Understanding of the communication of research to practice would be aided by a framework which not only identifies the channels through which such communication occurs, but also the processes involved. Exon (1986, p. 112) modeled the relationship between research and practice as a two-way relationship conducted across three levels of activity (see Fig. 1). In this model, research occurs at the *theoretical* level and practice occurs at the *operational* level. Activities at these two levels are connected by a flow of information through the *intermediate* level where activities are represented by four "intermediary communication devices, acting as agents of diffusion" (p. 113). Research therefore informs practice, not directly, but through the mediation of education, publication, consulting, and in-house research. The dissemination activities of interest are not just those of the practitioners and researchers, but also those of people in positions to mediate the communication between them: educators, writers, publishers, consultants, and action researchers (who may or may not also be practitioners).

Exon's approach has much in common with theories that describe the communication channels used in diffusion of innovation. Williams et al. (1997) suggested that aspects of diffusion of innovations theory could be used to examine the process of research communication to practice, an initiative taken up by Haddow (2001). Haddow characterized the results

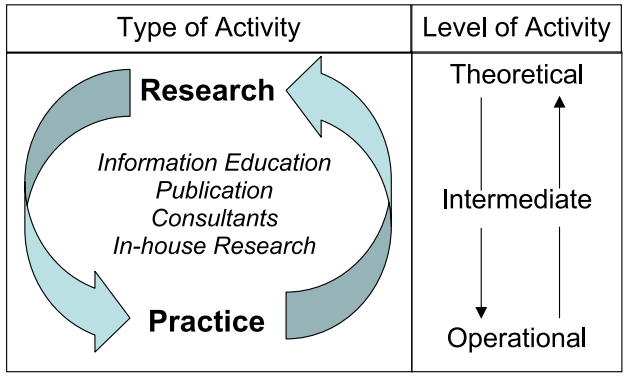

Fig. 1. The relationship between theory and practice (based on Exon, 1986).

of research as innovation, and—using the diffusion of innovations theories of Rogers (1995) and Spence (1994)—identified five channels through which research may be communicated to practice in LIS:

- Publications—the LIS literature (periodicals and monographs) and mass media publications.
- Institutional—the organizations and agencies that provide formal structures for LIS in terms of education, employment, and professional standards.
- Commercial—the agencies with which LIS professionals interact on a commercial basis for the acquisition of equipment, materials, and advice.
- Informal—friends or colleagues with shared interests and concerns. This communication may be enabled by the more functional institutional and commercial channels, but is not dependent on their protocols and structures to occur.
- System use—use of automated library and information systems and the Internet.

Haddow (2001) used multiple research methods to study the communication of research to practice through each of the five channels. She used citation analysis to trace the chain of links between seminal research publications in information retrieval and practitioner publications. She interviewed 40 Australian library practitioners about their awareness of the research into alternatives and extensions to Boolean retrieval methods and how they gained that awareness. Then, she returned to the publications, this time using content analysis to study the extent to which the publications that the practitioners read actually published information retrieval research.

Haddow's research confirmed that there is little communication of research to practice through periodical publications. The publication read by most participants was *InCite*, the monthly newsletter of the Australian Library and Information Association, but it was not a source of research awareness and referred to aspects of information retrieval research only six times in the 5 years prior to Haddow's study. Although most participants in her study, like those in Powell et al.'s (2002) study, had read publications which had published or cited

seminal works in information retrieval research or carried other information retrieval research content, few reported gaining awareness of recent information retrieval research through these types of publications. Twenty-five percent of the participants did cite publications as a source of awareness, but these were primarily books and monographs rather than periodical publications and the awareness gained through reading them was low.

While few of the practitioners in Haddow's study gained awareness of information retrieval research through reading, most were aware of it, having gained their awareness through either participation in formal education, or system use, or both. The most aware practitioners had gained their awareness through one or all of three channels: formal education about information retrieval (rather than research education) as part of their initial professional education in LIS (an institutional channel); use of library systems which used techniques, such as relevance ranking, that have been introduced as the result of information retrieval research; and participation in commercial agency training associated with adoption of new information systems. The strongest awareness came through participation in formal education. Informal communication, although not uncommon, resulted in only low awareness. These channels are listed in Fig. 2, in the order of the effectiveness with which they mediated between research and practice.

The role of awareness through system use points to an important aspect of the communication process. Practice may be informed by research without conscious action on the

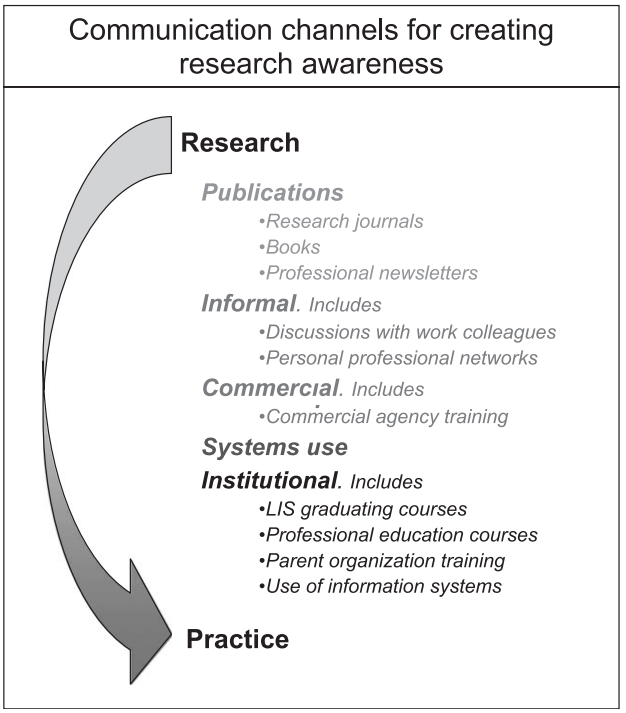

Fig. 2. Channels for communication of research to practice (based on Haddow, 2001).

practitioner's behalf. Whether the practitioner is conscious of it or not, system designers, developers, providers, and trainers act as intermediaries between research and practice.

6. Research implications

While this review has enabled identification of 11 forms that the gap between research and practice may take, strategies to close the gap, some evaluation of those strategies, and some frameworks which might be used to gain a better understanding of the communication of research to practice in LIS, it has also identified that only a small body of research has specifically addressed these issues. More research is needed to understand the gap and to identify effective strategies for improving the communication of research to practice.

A number of questions about the gap remain. What is its extent? Which of the 11 types of gap described in the literature reflect natural differences in the activities of researchers and practitioners? What is the effect of the gap in its different forms? It is assumed that practice fails to benefit from research, but in what way, and to what extent? Can any of the forms of the gap be bridged by the activities of researchers, practitioners, or intermediaries? The frameworks presented in this article may provide a starting point for study of these questions.

Further research is also needed to evaluate proposed strategies for closing the gap. Existing evidence suggests that practitioner education in research methods does not increase practitioner research activity, but it may close the gap in other ways by developing competence with research terminology and the knowledge and skills to read and critically evaluate research. Even so, if the other gaps, such as the motivation and temporal gaps, dominate, research education may have little effect. Research that evaluates each proposed strategy should therefore consider the effect of the strategy on each of the gaps.

The available research suggests that only one of the proposed methods for improving the communication of research to practice is likely to be effective: inclusion of research reports in newsletters and other publications frequently read by practitioners. Yet, this approach has not been widely adopted. This observation suggests two strands of research: research to understand the effectiveness of including research reports in practitioner publications, and research to understand why it has not been widely adopted. Rather than another survey of practitioner preferences or self-reported information seeking behavior, a field study is required. Such a study might be based on identification, or insertion, of research reports in popular practitioner publications, associated with market research techniques for analysis of reader attention to the research reports and other content. The study could compare the cost and effort required to produce the reports with the return in terms of reader attention. Further research might also consider impact on practice.

Despite the attractiveness of the notion of evidence-based practice, research to date provides no indication that evidence-based practice as it is implemented in other fields would lead to better dissemination of research to the practice of LIS. Nonetheless, certain elements of evidence-based practice may usefully be adopted by LIS. Rigorous summaries of research on a particular topic, and guidelines for practitioners to follow to apply the results of research, written in practitioner language, may be included in popular practitioner publications.

Alternatively, practitioner summaries and guidelines may accompany articles in research publications. Field research which evaluated and compared the effectiveness and effort associated with each of these approaches would be valuable.

Additional strategies for improving the communication of research to practice may be identified by focusing on the other channels through which research is communicated to practice. Practitioners become familiar with the results of information retrieval research when they use, or receive training on, systems that apply the results of this research, yet they may not be conscious that they are applying the results of information retrieval research. Would practice be better informed if practitioners were more conscious of the underlying research that is being applied, or if they knew of this research before they undertook training or began to use systems that applied the research? If so, which methods would most effectively inform practitioners of research developments? The answers to these questions would be better informed by research which addresses them.

Haddow's (2001) study suggests that formal professional education that refers to and incorporates the results of research creates stronger awareness of research than any other communication channel. Participation in continuing professional education appears to have some advantages over the other strategies, addressing several of the gaps. It would ensure that practitioners are informed of research without the responsibility for performing research activities. If practitioners could select professional development programs that met their specific practice needs, this approach could help reduce the "relevance gap" by incorporating the results of relevant current research. Nonetheless, few practitioners undertake continuing education. Many professional bodies (notably in fields such as engineering, accounting and statistics) use incentives or codes of conduct to encourage members to undertake ongoing professional development (Engineering Council, 2001; Royal Statistical Society, 2000). Some have a minimum annual requirement for continuing education, while others provide additional recognition or a higher grade of membership for those members who meet the annual requirements (e.g., the Australian Computing Society's Practising Certified Professional program, http://www.acs.org.au/training/pcpprog.htm). In some professions, formal and self-training associated with adoption of new systems and techniques, including commercial training, are also recognized as contributing to continuing professional development. Research is needed to determine the effectiveness of such approaches in LIS. Practitioners could be invited to participate in a voluntary incentive program for a fixed period, and their response to the program evaluated along each of the gaps, to determine both the value of participation and the effort required to participate.

7. Conclusion

Despite all that has been written about the research–practice gap, the field still lacks strong research evidence about how LIS practitioners find out about research and which strategies enable and encourage effective communication of research to practice. The current revived interest in the topic, illustrated by the number of recent professional discussions and research projects in the field, along with the airing of similar concerns in other professions

such as the health sciences, provides an opportunity to reconsider the concerns raised in these discussions. It gives impetus for examining initiatives for improving research communication in other disciplines and assessing the application of these and other strategies in LIS. Perhaps most importantly, it highlights the need to conduct research which studies the communication between research and practice in depth, and tests the effectiveness of proposed strategies for improvement. In this way, our professional practice would move a step closer to achieving the aims expressed by many of our authors in the past; it would be derived from research.

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