Title:

Evidence-based practice in teaching: an information perspective.

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Abstract

Purpose – This paper explores UK teachers' use of research-based information, with a particular focus on issues relating to access to information in schools, information literacy, and the role of the school librarian and school library services.

Design/methodology/approach – The study adopted a mixed methodology. Indepth qualitative data gathered through vignette interviews (n=28), group exercises (4 groups of between 3 and 5 teachers) and a discussion forum were supplemented by quantitative data gathered through surveys of teachers (n=312), head teachers(n=78), school librarians (n=78) and school library services (n=26).

Findings – Teachers' professional use of research information reflects a preference for predigested information and informal sources. Although professional bodies and government departments promote the use of research by teachers and provide a range of customised websites for information, lack of ready local access to information and lack of time were cited as major barriers to the use of research information. Teachers also revealed uncertainties and lack of confidence in their own ability to find and evaluate such information. The findings suggest scope for more targeted provision by school librarians of both information and skills to support the professional development of teachers. However this raises issues of priorities and resources, and needs to be seen in the context of a wider change in ethos supported by senior management. The study also raises questions about teachers' own experiences and approaches to the use of information in professional learning, and how this might impact on the provision of support for their pupils and the potential for collaborative working between librarians and teachers.

Research limitations/implications – The qualitative aspects of the study provided a rich source of data from teachers with varying levels of experience and involvement with the use of research information. However a low response to the teacher questionnaire survey (10.9%, overall, 312 teachers) resulted in a bias towards more research orientated teachers in that particular data set. While the data from research-orientated teachers does appear to triangulate it is difficult to generalise to other teachers. Therefore teacher survey data has been treated with some caution and drawn on only to aid further understanding of the issues raised in interviews and group exercises.

Originality/value – In focussing attention on teachers' information behaviour and information literacy, this paper a) provides a new perspective on the issues affecting the lack of uptake of research evidence within the teaching profession; b) contributes to the literature on information behaviour and information literacy in professional contexts; c) contributes to the understanding of factors which may have a bearing on the development of student information literacy in schools.

Keywords Information literacy, Information behaviour, Evidence-based practice, Teachers, Schools

Paper Type Research Paper

Introduction and background

Evidence-based practice, the use of research evidence to support learning and decision-making, is increasingly recognised as important in a range of professional contexts, including education (Trinder and Reynolds, 2000). In schools Davies (1999) suggests that evidence-based practice should encompass not only the establishment of sound evidence through systematic collection at school level but also the use of evidence from a wide range of educational research external to the school. This emphasis on the external knowledge base reflects Stenhouse's earlier definitions of the teacher-researcher not only as action-researcher, i.e. a teacher who conducts research in their own classroom, but also as someone who tests out the application of other people's research findings in their own practice (Ruddock and Hopkins, 1985). More recently, Cordingley (1999) referred to a "*need to see the activity of interpreting evidence developed by others as a high status activity which is central to reflective practice*" and an integral component of critical thinking, innovation and improvement in schools. However, there have been concerns for some time within education about the lack of engagement by the teaching profession with the wider research base.

In the UK, specific concerns about lack of access to appropriate information sources to support evidence-based practice in schools have recently resulted in initiatives to provide better online access to research digests, reports and systematic reviews of research by organisations such as EPPI-Centre, the General Teaching Councils (GTC) for England and Scotland, the British Educational Research Association (BERA) and the UK's Department for Education and Skills [1]. These attempt to address the problem of lack of take-up of research evidence by focusing particular attention on intellectual access to research evidence and teachers' strong preference for the presentation of research findings in a way which stresses the relevance and application to practice (Cordingley, 1999; 2000). Yet, despite these online developments, relatively little is known about the wider informational aspects of the take up of research evidence and the kinds of information support required to encourage evidence-based practice within schools.

Previous studies of teachers' use of research outputs world-wide have focused on a range of issues, the most prominent of which include the content and relevance of educational research (e.g. Biddle and Saha, 2002; Malouf & Schiller, 1995; Fullan, 1992; TTA, 1998); the presentation and diffusion of research findings (e.g. Cordingley, 1999; Figgis, 2000; NERF, 2000); and the school ethos (e.g. Hargreaves, 1999). Taken together, this body of research signals a growing acceptance of the need for a multi-faceted approach to the challenges of evidence-based practice, i.e. an approach which not only examines the issues related to the research process and organisational culture but also seeks to understand the teacher as professional learner and information user. From the information perspective, in order for teachers to learn from research evidence it is not only important to have access to *research information*, the formally or informally *published output of a planned piece of research,* but also to be information literate, i.e. to be able to find, critically evaluate, and use the information in context. The development of information literacy in pupils has long been a recognised issue within schools, resulting in many attempts to develop frameworks, standards and strategies. In contrast, relatively little is known about the information strategies and real-world literacies of school teachers themselves. Two previous UK studies from the 1990s indicated that teachers and student teachers were not confident information users (Best, 1990; Wilson, 1997). Could this be an ongoing factor in under-use of research information? While acknowledging the complexity of the diffusion and impact of research (e.g. Weiss, 1979; DETYA, 2000), to what extent do teachers' approaches to information seeking and using have a bearing on the development of evidence-based practice and innovation in schools today?

In the UK the presence of information professionals in schools varies across sectors and geographical areas, and until the recent increase in internet access in schools and homes, teachers have been operating in an environment in which the range of information has been limited. Could it be that teachers have not tended to develop the kind of information literacy or information attitude which would support evidence-based practice in its fullest sense? Alternatively, if the issue is more to do with providing access to research information reliance on the provision of more online access to centralised sources of information may not

be the most effective solution, as previous research (Zeuli, 1994; Cordingley, 2000) has suggested the importance teachers place on contextualised and locally targeted information. If so, as the most locally available information specialists, could school librarians and centralised authority wide school library services (SLSs) provide more targeted support for evidence-based practice? What do they currently offer and what do teachers feel about libraries as a source of support for their own professional development?

This paper reports on findings from a study which sought to address these questions. The research was funded by the Economic and Social Science Research Council (ESRC) and took place in 2002-2003, at a time when there had been major government-led initiatives to provide enhanced access to the internet in all schools and ICT training for all teachers. With some of the more fundamental information access problems having been alleviated, it was considered timely to examine the more complex information issues which might be associated with the take-up and use of research information.

The aims of the study as a whole were to:

- examine teachers' current practice, attitudes and confidence in relation to the effective use of research information in their professional practice, and
- flag key implications for the greater integration of evidence from research information in teaching practice.

This paper focuses on issues relating to access to research information, teacher information literacy, and the potential role of the school librarian and SLSs in supporting these aspects of evidence-based practice. Clearly in addressing such issues as teachers' information behaviours in relation to their own professional development, the study also reveals issues and perceptions about the information process more generally. These may well be relevant to understanding teachers' approaches to the development of information literacy within their own pupils.

Methodology

Reflecting the complexity of the "research into practice" process, the study employed a variety of qualitative and quantitative techniques to explore different aspects of the research problem. Qualitative methods provided in depth exploration of the key issues with an emphasis on the practitioner experience and perspective. Data from questionnaire surveys supplemented the qualitative data and provided a broader perspective from not only teachers, but the key professionals who have a role in leadership and development in schools (head teachers and local education authority (EA) advisers) and those who provide information support (school librarians and SLSs). This paper focuses on feedback from teachers themselves and on the perspectives of the information professionals most closely associated with schools in the UK, i.e. school librarians and SLS librarians. All data collection instruments and methods were piloted prior to use with the main samples. A summary of the research approaches is provided in Table I, and further detail on each is provided below.

Interviews

Interviews incorporating a vignette technique provided qualitative data about teachers' information behaviour. The vignette offers *"a method that can elicit perceptions, opinions, beliefs and attitudes from responses or comments to stories depicting scenarios and situations"* (Barter & Renold, 1999). The use of the technique in qualitative research allows for freedom of response through open ended questions, and enough flexibility for the respondent to provide an account of their response to the given situation which is closely allied to their own experiences, opinions and behaviour. A discussion of the variety of applications of the vignette technique, and the merits of each, is provided by Finch (1987). The technique has been increasingly used in information science research and wider social science research over recent years as both a method of collecting data and presenting analysis (Urquhart, 2001). Use in previous studies by the authors of this paper has proved helpful in presenting issues in a non-threatening way and encouraging participants to reveal their

behaviour and decision-making strategies in the context of a recognisable professional situation (Williams et al, 2000).

Table I: Summary of Methodologies

Method	Number of Participants	Purpose	Additional Details
Interviews	28	To provide data on teachers' information behaviour, with particular emphasis on information seeking and preferred/available resources.	Interviews were conducted with head teachers, teachers and senior teachers from primary (54%), secondary (39%), nursery and special education (7% combined) schools across five authorities
Literature Response Groups	15	To provide data on, a) information literacy, with particular focus on the evaluation and synthesis aspects and, b) teacher preferences in terms of presentation of information.	Literature response groups were held in four different authority areas and participants included teachers, head teachers and senior teachers from the primary, secondary and nursery sectors.
Questionnaire Survey		To gain a broad range of perspectives on the 'research into practice' process. Data was gathered that related to attitudes towards research, information sources, confidence in handling research and general information, barriers to the use of research information and dissemination activities.	
Teachers (T)	312		T: 3000 distributed, response: 10.9%
Head Teachers (HT)	78		HT: 500 distributed, response: 15.6%
School Librarians (SL)	78		SL: 250 distributed, response: 31.2%
EA Advisers (EA)	55		EA: 100 distributed, response: 55%
School Lib Services (SLS)	26		SLS: 49 distributed, response: 53.1%
Discussion Forum	21 posts	To elicit responses to initial findings related to both validate and enhance understanding	The discussion forum included feedback from head teachers, librarians and teachers.

In this case, teachers were asked to reflect on two scenarios which were likely to provoke a need for additional information. These vignettes provided opportunity to explore how they went about seeking information, the extent to which they made use of research information as opposed to more general information sources, and any differences in information behaviour related to the type of information need in terms of content and nature of information source. The first scenario was concerned with the need for subject information provoked by the introduction of a new subject, or a new aspect of an existing subject, into the school. The second was concerned with a new pedagogical challenge. The content of the vignettes was altered slightly to reflect the individual responsibilities of the interviewees who included nursery, primary and secondary teachers and head teachers. Each vignette asked respondents what they would advise a colleague or student teacher to do in looking for and using information, thus eliciting their own preferences in a non-threatening way. This strategy was also designed partly to overcome the danger that respondents would tell the researcher what they thought they *ought* to do than what they *actually* do. At the end of each discussion, respondents were invited to try to relate the scenario to personal experience of a similar and real event as a further way of verifying their own information preferences. Interviews of approximately 1 hour's duration were conducted with a total of 28 teachers drawn from a random sample of schools across five authorities. Where permission was given (n=25), interviews were taped and transcribed verbatim. In the three remaining cases, extensive notes were made. Transcripts and notes were coded using QSR N4 Classic software and significant themes and patterns relating to the participants' information literacy and factors affecting their information seeking behaviour were identified. Comments relating to available and/or preferred resources and barriers to the information seeking process were also noted.

Literature Response Groups
Four literature response groups provided further evidence relating to both information literacy (particularly the evaluation and synthesising aspects of the information process) and teachers'

preferences in terms of the presentation of research information (particularly the appropriateness of the style and level of research detail, but also design concerns).

Over 2-2.5 hours, those taking part in the exercise were presented with examples of research outputs (e.g. journal articles, reports, digests) relating to two topics considered by the project advisory group which included primary and secondary school head teachers to be of broad relevance: ICT and class size. Each theme was represented through a range of research sources offering different levels of depth of coverage and quality assurance, and different formats (print-based and internet-based). Teachers were given a short time to read and evaluate the quality and relevance of information in each example and make individual notes on each item. They were then asked to discuss as a group issues relating to presentation of information (ICT theme), and information content (class size theme). Group discussions were transcribed verbatim and transferred onto the qualitative research software for coding. Notes made by participants were also included in the analysis.

Both the literature response groups and the interviews above relied on voluntary participation by teachers in response to the dissemination of written information about the study to a random selection of schools across 5 authorities. While funding was available to offer classroom cover, in practice it can be difficult for schools to find relief staff and this offer was not taken up. Given the voluntary nature of participation there was initially some concern that the samples might be biased in favour of more research oriented professionals. However, in practice the samples were relatively evenly mixed in terms of experience of research-based activity: just under half (7) of group exercises participants and just over half (15) of interviewees indicated that they had undertaken research-based study. The interviews and group exercises themselves revealed a wide range of opinions, experience and knowledge.

Questionnaire Survey

In order to gain a broader view of current perceptions of the 'research into practice' process, questionnaires were sent to a representative sample of teachers, head teachers, school librarians, SLSs, and EA advisers in Scotland, England and Wales. Teacher response rates were disappointingly low (10.9% after prompt letters; 24% in geographical areas where it was possible to target teachers directly rather than through their schools) although response rates from the other groups were higher (see Table I). These response limitations are likely to introduce an element of bias towards those who are more motivated to use research evidence; in fact 84.3% respondents indicated that they read research to inform their practice. On the other hand this group is also more likely to be aware of any information issues affecting their uptake of research information. The final sample of 312 teachers included a range of sectors, teaching experience, ages, genders, subject responsibilities, school locations and sizes. Thus, while survey results cannot be generalised widely, when combined with complementary sets of data from the more qualitative aspects of the study, they contribute to the overall understanding of the issues raised.

Discussion Forum

Individuals from each of the participant groups (teachers, head teachers, school librarians, SLSs and EA advisers) were invited to take part in an online discussion forum around a number of the main themes that had emerged from the data. Those who expressed an interest in taking part were sent a brief outline of the preliminary findings and invited to comment. Although participation was limited (see Table I), comments complemented data gathered through other methods and have been included where they provide a fuller perspective on key issues.

At each stage of the data collection, where appropriate to the issue under discussion, efforts were made to distinguish between teachers' use of research information and teachers' use of information more generally. The methodologies used were also aimed at identifying differences in approach to the use of research evidence for different purposes. Where differences occur, these have been highlighted. Generally, however, responses indicated that

there was little distinction between the approaches used by teachers in these different contexts.

Findings

Interviews and group exercises revealed a range of issues relating to accessing sources and information literacy which appeared to be influencing the take-up of research evidence. Despite the clear differences in levels of research orientation between these samples and the survey respondents (see above), it is interesting that viewpoints expressed in interviews and group exercises were frequently echoed in survey responses, albeit in less depth. Findings are presented and discussed below under the two broad areas of access and information literacy. The role of librarians in supporting teachers in the use of research information is also discussed under each theme and implications examined.

Accessing Sources: preferences and barriers

Teachers and head teachers in this study tended to rely on a relatively narrow range of sources for both general and research information. Unsurprisingly, a preference for readily available sources, particularly those available within school, was evident: *'I doubt that I would go and search them out if they weren't at school ... I don't have time to go and look for things.'* (teacher, primary). More interesting, given the focus of this study, was the fact that interviewees indicated that the information sources most frequently used were colleagues, in-service events, the internet, newspapers and the kind of reports and professional journals that teachers are already likely to find in school, e.g. inspectorate reports, information provided by the education authority, the Times Educational Supplement and, in Scottish schools, summaries of research funded by the Scottish government. Teaching colleagues were frequently identified as the first point of call when responding to a need for new information, whether looking for pointers to sources of information on a particular issue or subject *'I would speak to people that I know are doing an MEd and, you know, ask if there was anything they could recommend.'* (principal teacher, secondary); or looking for experience or knowledge of the same *'it's really good to speak to other schools in different settings as well, and to see where they had maybe found strengths and where they had found weaknesses.'* (teacher, nursery). Data from the surveys echoed these preferences, 'informal discussion with colleagues' being cited as the most regularly used source of research information in the two contexts specified, i.e. use of subject related research information and use of research concerning teaching and learning theories and practice (see Table II). In fact, with the exception of the research summaries, sources which could be relied on to provide breadth or depth of coverage or reliable quality of research findings in relation to teaching, learning or subject interests were rarely mentioned. Many of the sources named were informal sources and not explicitly research-based and there was generally no distinction made between sources that would be used for research information and those that would be used to meet wider information needs.

The various roles which other people may play within any information seeking process has been acknowledged in a number of models of information behaviour over the years (Wilson, 1999) and the reliance on colleagues as sources of information in a work context is a phenomenon reported in other professional groups (Leckie, et al., 1996). However, teachers' preference for colleagues as sources of *research* information is particularly interesting given the implications for decision-making of partial or selective exchange of research evidence. It is likely that the reliance on colleagues in this case is at least partly linked to teachers' overall preference for sources and reporting styles which make an overt link between research findings and the practical classroom context (Cordingley, 1999; 2000). Thus, while they may value the research knowledge of their colleagues, it is likely they place greater value on their sources' knowledge of the classroom and their ability to translate research findings into terms to which they can relate: *"I need the practicality of getting it into the classroom"* (principal teacher, secondary).

Table II: Teachers' Use of Sources of Research Information (from questionnaire survey)

Source used for **subject related** research	% regularly using source (n=312)	Source used for research related to **teaching & learning theories & practice**	% regularly using source (n=312)
Colleagues: Informal discussions	46.5	Colleagues: Informal discussions	34.3
Professional magazines or newspapers	41.3	Professional magazines or newspapers	34.3
In-service	37.2	In-service	30.1
EA Information	34	EA Information	28.5
Mainstream Newspapers	29.5	Colleagues: school-based development meetings	25
Colleagues: school-based development meetings	28.5	Mainstream Newspapers	17.9
The Internet	27.6	The Internet	13.5
Colleagues: EA-wide development meetings	15.7	Head teacher	13.1
Colleagues: local subject networks	15.4	Colleagues: EA-wide development meetings	11.9
Head teacher	13.8	Research journals	11.2

The findings suggest a strong overall affinity with Borgatti and Cross's information seeking model which identifies four main factors influencing choice of sources: knowing what another person knows; valuing what that other person knows in relation to one's work; being able to gain timely access to that person's thinking; and cost (Borgatti and Cross, 2003). For example, teachers talked about using colleagues as a way into a subject: "*someone might say 'I'm really into that, I know a lot about that, I can maybe help that open up for the rest of the school'*" (senior teacher, primary). They also relied on them for their knowledge of sources, although there were indications that by doing this they were often compensating for their own lack of knowledge of sources, or lack of confidence to evaluate sources: "*I was having a really hard time getting that information on the website. And I said to [my colleague], 'do you know' ... 'yeah, I know exactly what one to go to'. So that short-circuited the whole process, and that was very helpful*" (principal teacher, secondary). For teachers, a major cost factor in accessing any resources is time. While cost savings can be made by drawing on the knowledge of local colleagues, in the case of research information there are likely to be hidden costs in terms of the overall quality of information, as acknowledged by one of the interviewees '*you talk to the people on your own school; that's fine, but you get a very limited view ... the danger is there that the person you ask has asked somebody else in the same school and it gets very in-bred.*' (teacher, secondary). The potential for dilution and/or partial reporting of evidence could be seen as an issue for evidence-based practice in schools.

Comments from interviews suggest that lack of time was a significant barrier to the use of information in general, as well as research information in particular: "*There's things of interest, it's just time*" (senior teacher, primary). Data from survey respondents lends support to the dominance of time as a barrier to the use of research information. Respondents were provided with a list of 35 potential barriers covering a range of issues relating to the respondents' own characteristics, values and skills; physical accessibility of research; the organisational ethos and the quality, presentation and accessibility of the research [2]. A majority (78.7%) indicated that the fact that they did "...not have time to find and read research" was a 'moderate' or 'great' barrier. Indeed, the six top-ranking barriers tended to relate to lack of ready access and lack of time to look for appropriate research information.

It is likely that time was also a significant factor behind the widely expressed preference for the internet as a point of access to information: "*I just find it much easier to access and get the sites, it doesn't take me forever to find them*" (guidance teacher,

secondary). Many teachers pointed out the convenience of using the internet over visiting the library: *"I don't make much use of the library for research. I would tend to use the internet more than anything. ... It's just the handiness of that, as I said, I can do it in my own time, under my own conditions, at a time that suits me"* (principal teacher, secondary). The growth in the use of the internet by teachers to support their professional development is in sharp contrast to the findings of an earlier survey amongst Scottish teachers in 1998 which indicated that the internet was largely seen as a teaching tool rather than a point of access to personal or professional information (Williams et al, 1998). However, although the internet may be more immediately accessible, some teachers still found searching the internet time consuming. One primary head teacher, who was a relatively active user of research but was unsure of her information skills in the context of using the internet, pointed out*: "It just takes a lot of time. And you don't have time in school to sit and do that"*.

The amount of time required to sift through the information was an issue across the wider spectrum of potential sources. Teachers' comments indicated that they would value the provision of a well organised point of access to research information within the school. During the discussion forum, one head teacher suggested that this could be delivered via the internet: *"part of the solution would be the establishment of an internet site devoted to giving summary statements concerning the various strands of research currently being undertaken"*. This suggestion also supports the widely held view that some level of pre-digestion of the research would be useful, or at least a more targeted approach to the organisation of research. While this is the approach being taken by websites such as those of the EPPI-centre's Research Evidence in Education Library (REEL), GTC England's Research of the Month summaries, and DfES's The Research Informed Practice Site (TRIPS) there was no mention in the survey or interviews of such sites, far less any regular use of them. This may simply be due to the fact that teachers were not yet aware of these sources, but there may also be perceptions of difficulty in relating the contents of such centrally produced sources to the local context.

Accessing Sources: the librarian's role

When asked directly about whom they thought should have responsibility for research information dissemination, teacher respondents in the survey tended to identify the role with head teachers and EA advisers rather than school librarians and SLSs. Paradoxically, however, "lack of access to research information in the school library" was ranked by the same group of respondents as the 6th most prominent barrier (out of 35) to the use of research information, the top five all being concerned about lack of time or ready access to information. Comments during group exercises and interviews revealed similarly varying perceptions of the value and role of libraries in supporting their professional information needs.

A number of teachers spoke about positive encounters they had experienced with libraries, librarians and more specialist support services available to them outside school. A smaller number also spoke about positive experiences with their own school libraries and school librarians: *"[the school librarian] actually is very well versed in finding things, she's quite internet aware. And she'll come up with very interesting websites for such and such a thing which she'll circulate. So in that sense, we've got a good source there"* (teacher, secondary), and there was evidence that where greater access was provided it was appreciated: *"I picked it up in the library, it had nothing to do with something I was looking for, and I started to read it and was fascinated by it"* (teacher, primary). One teacher, who had only recently learned that his local SLS held a range of teaching resources, was a keen user of the service even though it was a considerable distance from his school: *"the resource centre of the authority ... it's very convenient because I can use email, or should I be down on a course like this, finishes at 3pm, I can be down in _____ for an hour and a half before I head back up the road"* (deputy head teacher, secondary). However, other teachers understandably found it more difficult to travel to a central SLS: *"we can't traipse back to _____ every time we want to look at a book"* (teacher, secondary). A comment from a primary head teacher who had found visiting the local SLS to be problematic suggests a

possible solution: "_____ has just made its library service online so there might be online subject areas now... so it could be that certain types of papers become more accessible"

Similar views were expressed about university libraries. Where teachers had the opportunity to use them (generally if they were or had been recently involved in further study) they valued the services and resources provided: *"I found it really fascinating because they had all the latest journals in there. The text books were more up-to-date"* (deputy head teacher, secondary). However even amongst current users of such services the problem of time was again a significant factor: *"I do not have time. Teaching is not a job where you can say right I'll leave my in tray until Tuesday. I've got pupils sitting out in the classes, I can't go away. And obviously the distance thing..."* (principal teacher, secondary).

There tended to be a perception amongst interviewees that school libraries and SLSs were not providing ready access to the range of materials required to support evidence-based practice. There were indications that teachers generally saw the school library as a resource for pupils and not their own professional development: *"The school library in school has children's books, and there's a teacher's resource room but it's more children's activity type books or books to help you teach..."* (teacher, primary). Budgets and conflicting priorities for funding limit what school librarians can provide for teachers and, as one teacher acknowledges, there are difficulties in catering for all the research information needs of all their teachers: *"you know when you've got a child with Special Education Needs, a specific syndrome ... you know, one child in the whole school, we're not going to buy a book on it"* (teacher, primary). The surveys of school librarians and SLSs revealed that their ranges of potential sources of research information tended to be limited to more generalist or accessible sources such as the internet, professional magazines and newspapers, and EA information. While 25.6% of school library respondents and 25% of SLSs did indicate that they provided access to research bulletins and 23.1% of school libraries and 50% of SLSs indicated provision of access to research journals, it is not clear how they were interpreting these terms. It is unlikely that many school library budgets would stretch to the subscriptions charged by specialist academic research journals and there was certainly no evidence from interviews or group exercises that provision of such sources was widespread: *"We have a resource area ... there are publications ... but it's very much related to your teaching practice"* (teacher, primary); *"But we don't get any of the educational journals within the school; they're not accessible"* (teacher, secondary).

However, while school libraries cannot be expected to provide the range of in-depth research materials that might be found in an academic library setting, the examples of positive comments about the value of libraries above suggests that there is potential to address teachers' research information needs in other ways. In addition to research information resources, a range of research support *services* were shown to be provided by school libraries and SLSs (see Figure 1). The most widely available tended to be more informal but also, potentially, the more personal, e.g advising on sources in response to a request, occasional alerting to relevant information and more general advice about finding information.

Feedback from school librarians suggested that, in some cases, there was little evidence of a demand for such services or for more specialised sources of external research information, but that if a need was identified, policies could change: *"If librarians are made aware of a demand for research findings then perhaps this would become a higher priority"* (school librarian, discussion forum); *"I am never asked by teaching colleagues for information on research.... I would be delighted to be the contact point for such requests, or to provide assistance on tracking down such material on the Net in order to save teacher time"* (school librarian, discussion forum). Lack of demand may be partly explained by teacher perceptions of the school library as a resource for pupils. However it may also be tied in with the need for more pro-active dissemination of information and promotion of services: comments in interviews suggested that the more targeted that dissemination can be, the more likely teachers are to use the information: *'if it's in school and if it lands on your lap then fine, I'll read it, but I couldn't put a lot of effort into it.'* (senior teacher, special education school) A primary head teacher also suggested that teachers would look at information if they were

given it and interested *"but they wouldn't go looking for it. That's a huge leap... it's just like teaching; you have to gauge their ability and their interest and very much match it to them"*.
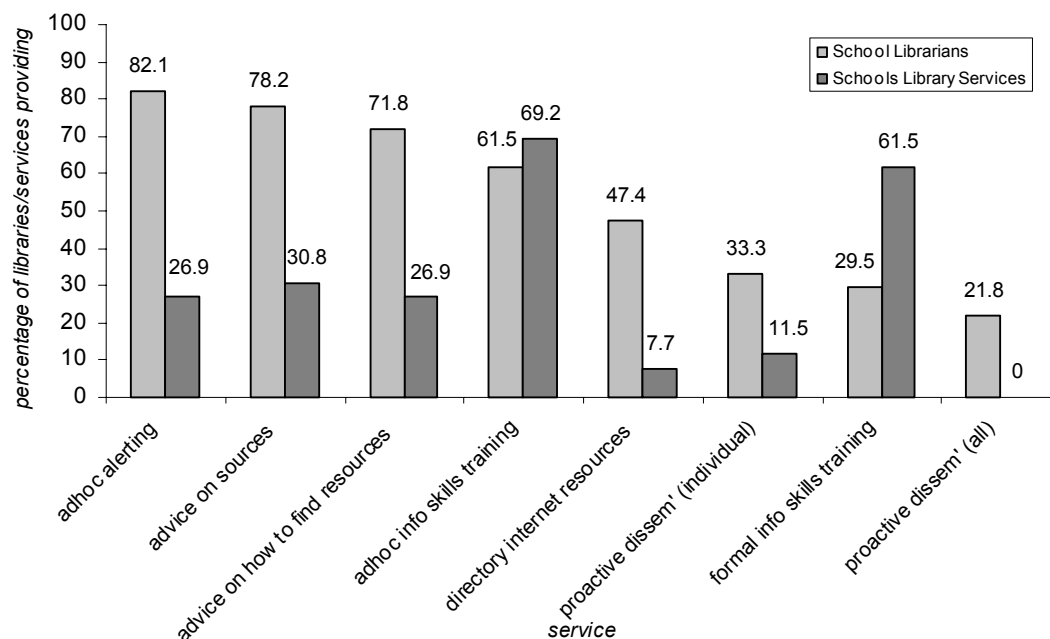

Figure 1: Provision of research related services by school librarians (n=78) and schools library services (n=26): data from questionnaire survey.

Given that primary schools are less likely to have the support of their own librarian, SLSs tend to have a particular role in supporting and advising teaching staff in that sector. It is interesting to note, therefore, that only a small percentage of the SLS respondents were proactively disseminating research-based information to teachers although those who do so appear to be responding to, or targeting, individual needs. It was also clear from survey responses that when school librarians and SLS staff do develop or gather materials for dissemination to teachers, they themselves make greater use of the more accessible sources available than the more rigorous and in-depth sources such as research journals, systematic research reviews, professional organisations and conferences. There is, therefore, room for more consistent and considered support of teachers' research information needs in terms of provision of access to a wider range of resources but, in particular, more targeted dissemination of information relevant to local concerns and individual concerns. Proactive dissemination may help overcome the impressions of many teachers that the library is a resource for pupils and knowledge of a local information point in school may encourage more teachers to seek out information for their own professional development and evidence-based practice.

Information Literacy

Given the problems associated with accessing a range of sources and the frequently cited problem of lack of time to search for information, to what extent is confidence in their abilities to find and use information an issue for teachers? Amongst the more research orientated survey sample, responses indicated teachers' overall levels of confidence in finding information were relatively high. However, it was clear that they were more confident in finding general information (93.1% 'confident' or 'very confident') than they were in searching for research information (68.2% 'confident' or 'very confident'). Moreover, as reported above, even with this more research orientated group, this confidence is based on

limited experience of information sources, with most relying on a relatively narrow range of sources for both general and research information.

Interviews and literature response groups, more mixed in their research orientation, reflected a wider variety of experience and attitudes. Themes emerging from the data were grouped into categories associated with traditional aspects of information literacy as represented in a wide range of definitions and frameworks, e.g. ACRL (2000), CILIP (2004), SCONUL (2004). Although pockets of good practice were evident, there were suggestions that teachers' use of research information could be restricted through limited skills and/or experience within a number of different phases of the information process.

Defining Needs and Locating Information

A number of interviewees admitted to problems and lack of confidence in defining a search strategy or knowing where to start, and even those who took a more proactive approach to finding information admit to difficulties in this area: *"sometimes I feel it's a bit of a needle in a haystack kind of thing…"* (teacher, nursery).

There were instances of more sophisticated cognitive strategies: one secondary teacher talked about searching the web: *"And what I do is start off with a better general search tool and then refine the results… I'll go for one word to get the first hit then one uses the plus operators… Or if I hit on a good site, sometimes that's a pointer to other sites"*. The use of bibliographies (web-based and print-based) was also mentioned by a number of teachers and was seen as a valuable way of identifying sources in a more directed way: *"…quite often you get the article that you're interested in, then you use the bibliography to blossom"* (teacher, nursery). However, this type of considered searching was not widespread amongst interviewees and internet searching was more commonly described in terms such as *"hit or miss"* (teacher, primary); *"just potter about"* (teacher, primary); *"sort of clicking fairly aimlessly about on the web"* (head teacher, primary). A more casual browsing approach was also often described when referring to non-internet sources and, while this is recognised as a useful strategy in some circumstances, for some it was just a way of coping with the difficulties of more systematic searching: *"I'll just go over and have a wander and just pick up journals off the site, let the serendipity effect take over. But I don't think I'm doing it systematically"* (teacher, secondary)

As already discussed, teachers revealed a preference for sources that were immediately accessible to them. While it was clear that for many this is due to pressures of time, for some it is also a way of coping with lack of knowledge about possible sources: *"It's knowing where to start to actually find what you are looking for. So I'd stick to sort of immediate things in my immediate environment…"* (teacher, nursery). When faced with a wider choice of information sources, some teachers are overwhelmed and tend to rely on direction: *"If I'd been told that would be a good journal or good book to look at... I think you kind of need that really, if you go to [the university library], you can imagine, there's so many journals on every subject under the sun"* (teacher, primary). It does appear that providing access to a wider range of resources will not in itself necessarily encourage teachers to make more use of research information in their teaching practice.

Selecting and Evaluating Information

Teachers recognised the need to make individual quality judgements about research outputs: *"And it is looking for the body of evidence, and whether you think it is good research"* (teacher, primary). However, some interviewees also indicated that the process could be challenging, either due to lack of self confidence about their ability to evaluate: *"I'd be really hard pressed to tell the difference between a good piece of research and a not so good piece of research"* (head teacher, primary), or lack of access to quality research resources: *"I don't really discriminate, anything that is available, it's quite a narrow range of material… and sometimes it's really quite out of date as well"* (principal teacher, secondary)

As more was revealed about teachers' information evaluation strategies and skills, it became apparent that usability issues were given at least equal rating with quality issues when

selecting information/sources. Generalisability of research findings was a dominant factor but this was often associated less with judgements of quality of research findings and methods and more with judgements of relevance of the research issue. Teachers found it harder to make judgements about the applicability and usability of research evidence if the authors did not make an overt link with practice: *"it wasn't specific enough for me as to how to adapt it to your practice"* (group exercise). Feedback from the survey also supported this view with 50.5% of respondents indicating that lack of clarity on the implications of research findings for practice was a 'great' or 'moderate' barrier to the use of research. While, again, it is likely that lack of time to read and digest research findings is a significant factor behind this preference, there were suggestions that it could also be due to a lack of confidence in interpreting research information: *"I found it really hard… because it was like, so abstract, and you had to do a lot of work to make it relevant to practice and experience"* (head teacher, primary). It was also likely that the preference of many teachers for research conducted by practitioners, who they believed would better understand the realities of the classroom, was linked to perceptions about the ease with which the findings could be translated into practice.

While issues related to usefulness and relevance dominated evaluation criteria, there was some evidence of the use of quality based criteria for evaluating research information/sources: *"Research methods included questionnaires, interviews, and video observation, documentary analysis and literature interrogation. ...I suppose it's the triangulation thing, it wasn't just hinged on one thing"* (nursery teacher). Although teachers sometimes recognised the need to consider the robustness of the methodological approach, they showed varying levels of understanding of how it could be interpreted: *"you had to be good at statistics to actually draw any conclusions from that… see if their conclusions are justified. I can't do that. ...so I don't know how credible that is"* (group exercise)

Teachers were aware of the possibility of bias and concerned about the 'hidden agenda' behind research, particularly in government sources: *"I think that when you pick anything that comes from any government body at all you have always got that* [possible bias] *in the back of your head anyway"* (group exercise). Linked to this was a wariness about lack of evidence, or at least the lack of visibility of evidence, particularly in the context of recommendations and guidelines produced by government sources: *"...what struck me as I was doing it was how often HMI* [Her Majesty's Inspectorate of Schools] *claim to be talking on the basis of research, but .... they never reference the research that their work is supposed to be based on"* (teacher, secondary). Somewhat contradictory to this, however, was the assumption by some teachers that materials produced by the government would be based on research and that it was not part of their role to explore the evidence behind, for example, a new initiative: *"I would hope that the research had been done and everything was all in place before it was actually put in front of me to use in the class"* (teacher, primary).

Organising and synthesising
Discussion about organising and synthesising information was rare in interviews or group exercises. However, there was some evidence to suggest that teachers could find the academic language, use of jargon, or the way in which data was reported to be a barrier:

> *'their terminology, I just didn't understand that, I've never done that kind of work and I didn't understand it. I would need somebody to explain a lot of that to me.'* (group exercise)

> *'I would be hoping to find a pre-digested version I think, because I don't have the wherewithal, if you like, to analyse, to form my own conclusions on the basis of the statistics that might have been generated by something like that.'* (head teacher, secondary)

While there were signs that some teachers were more comfortable with the synthesis process many indicated a preference for more compact, clearly signposted sources of information, or information that had been pre-digested in some way, e.g. delivered through an

in-service training session. Indications were that this was primarily a result of constraints on time. *'I would much rather get a processed piece of research than purely raw data spewing out. Now I am obviously quite competent to deal with that, but in a job like this where you're very, very time conscious, you look for the short cuts.'* (principal teacher, secondary). The dominance of this factor means that the wider prevalence of other factors, such as difficulties in synthesising research information, are likely to be masked. However, the limited discussion may also reflect a lack of confidence in this area. Even among some of the more research orientated survey respondents, confidence levels in relation to processing and applying information were lower than confidence levels in finding and evaluating information (see Table III).

Table III: Teachers' confidence across the information process (questionnaire survey)

Information process	Percentage teachers indicating 'confident' or 'very confident' (n=312)	
	General information	Research information
Identifying and defining need	91.9%	67.1%
Locating information	88.9%	60.9%
Evaluating and selecting information	85%	59%
Organising and synthesising information	81.1%	56.3%
Communicating and presenting information	79.3%	57.5%

Other reasons for lack of discussion could include the greater interest in searching and evaluating sources on the internet, or simply reflect a lack of self-awareness of the strategies employed. However, the lack of discussion on this theme of organising and synthesising information is perhaps an issue which would benefit from further study. These processes underpin the application of research to practice and have the potential to alleviate the frustration of information overload.

Communicating and presenting
Teachers also rarely spoke, in interviews or groups, in terms of communicating or presenting the information they had found. While there was widespread discussion of sharing of practical experience with colleagues, there was less evidence of sharing information sourced from research outputs. The few isolated examples generally referred to more formal opportunities for discussion such as a meeting of colleagues undertaking further study, or an exercise conducted for an in-service training session. While these examples were rare, where they occurred, teachers saw them as helpful: *"we say well that was a really good idea and that works, and we have tried that and, well, we talk through things they had said and how relevant in our experience we had found it, and wondered how on earth we had managed all this time without thinking about it"* (teacher, primary).

Opportunities to share information from research will depend to some extent on the ethos of the school. Teachers tended to feel more comfortable discussing ideas generated by research in schools where other colleagues also read research. As one teacher pointed out: *"There were a couple of teachers of a variety of ages that were interested so we'd have a chat about it, and it was more interesting because it helped you hone your ideas down ... if you are in a school where there's less people reading research, there is less debate"* (teacher, primary). Without a supportive research culture in school, discussion of research is more difficult: *"if I were to go to [my colleagues] and say 'I would like to discuss this piece of academic research with you', I can imagine the response would be that we haven't read it, that we're not expert in this, that we haven't got the whole range of information available to*

us, it would take us too long to do the preparation for that" (principal teacher, secondary). Therefore, although feedback suggests a widespread reliance on colleagues as research information sources, it is clear that it cannot be assumed that these consultations always involve the exchange of research evidence as such.

Information Literacy: the librarian's role
The evidence above suggests there is a need for greater development of teachers' information literacy. Teachers in this study acknowledge that they often find the information process difficult, particularly when they are accessing a wider range of information than is generally available within the school or the local SLS. For example, even when they find the time to travel to use university libraries, they can be limited by their ability to find information independently and tend to rely on the support of others, including librarians, with more specialist knowledge: *"you can imagine there's so many journals on every subject under the sun. So I would tend to wait to be directed by the staff at [the teaching college] or the library, you know"* (teacher, primary). Interestingly others felt that they could not or should not rely on having access to this kind of support: *"I think we are ... relying on librarians in university departments or librarians in colleges of education or librarians in schools to do a bit of it. And I don't think there's just as quite as free access using those channels as there might be"* (principal teacher, secondary).

While teachers described examples of their lack of skills there was no real acknowledgement that development of skills might ensure more efficient use of the little time available. Indeed teachers' diagnosis that lack of time was the real issue appeared on one occasion to be extended to their diagnosis of the challenges faced by their own pupils. Although not core to the discussion of their own experience, one secondary principal teacher talked about a recent experience with a class engaged in their own evidence-based practice: *"To save time ... the department will do the surfing first of all, and designate maybe a dozen or so websites and direct the kids to those ... it's the data that comes from it that we're interested in, and the kids themselves are so fluent at using the keyboard and the search engines and whatever, that's not really an issue. We don't have to train them to do that. What we do find though is the trouble that we all find using the net, is the kind of information overload side of things and that's why we [restrict the websites available]"* While this teacher sees that pupils and teachers alike can feel overloaded with information and *"spend forty minutes fruitlessly going through dozens and dozens of websites and at the end of the day come up with very little"*, the possibility that these feelings of frustration might also be linked to a need for more effective search and evaluation skills (as opposed to using the keyboard and search engines) was not raised. The strategy of pre-selecting relevant sources can be an effective and relevant way of focussing attention on the particular priorities of the curriculum, in this case the development of information and IT skills in manipulation and use of data. However it does not overcome the more general challenges that this teacher was voicing in relation efficiency and effectiveness of teachers' and pupils' websearching.

(but understandable if there are curriculum targets to meet – if there is a core body of knowledge to be learnt by the students, teachers may well want to avoid diversion. There are publications on FE college students' use of electronic information services that are relevant to the discussion here as the age range is comparable. It would perhaps have been useful to consider the construction of the Key Skills in IT, as that is pertinent to some aspects of information literacy that tend to be glossed over in the SCONUL framework, such as the type of information – text, numeric, image etc. I don't imagine school librarians will be manning the barricades to help students and their teachers with evaluation of statistical information – words are fine, numbers generally are not.)

While the majority of teachers taking part in the research did not *explicitly* recognise the need for the kind of support that would develop their own information literacy, there were indications that when it had been provided, it was well received. One deputy head teacher of a secondary school expressed enthusiasm for a recent information skills course he had been on as part of a wider course, and recognised its value both in terms of raising his awareness of potential sources of information and improving his ability to access them: *" ...because I did a*

course based at _____ College, I began to refresh my research skills, I began to find out where were the best places to get information" and later: *"now with that experience behind me I would be much bolder in seeking out information"*.

School libraries and SLSs surveyed were asked to indicate which of a selection of research related services they provided (see Figure 1). Information skills training (both formal and ad hoc) was provided by both groups. School librarians were much more likely to provide ad hoc information skills training (61.5%, n = 48) than they were to provide planned information skills training on a more formal basis (29.5%, n = 23). SLS respondents were just as likely to provide formal information skills training (61.5%, n = 16) as ad hoc training (69.2%, n = 18). It is interesting to note that SLSs, in contrast with the school libraries, were more likely to provide information skills training than any of the other research services suggested. However, although teachers were positive about such courses when they mentioned them, there was little reference to them overall. It would be interesting to know how many teachers are aware of such courses, and on what basis they are being offered. Given that time and ready access are important factors in the identification and use of research information, could the same be said of information literacy? It may be that the impact of information skills training will be greater where provided within the context of the local and individual needs of schools and teachers.

Discussion

Teachers in this study present a picture of a profession within which there is little expectation that seeking out research information from sources other than colleagues and informal sources will be part of their own professional development. While this may be no different from many other professional groups (e.g. Leckie et al, 1996) it presents a contrast to the expectations of the professional bodies and government education departments who have been promoting the benefits of evidence-based practice in teaching and developing customised websites to encourage teachers to access research information [1].

Teachers see lack of time as a major barrier to accessing a wide range of sources, whether general or research-specific, and expect that much of the processing of that information will have been done on their behalf. These findings indicate both the very real constraints of the working day within schools but also perhaps teachers' perception of the priorities and expectations of them as professionals, i.e. delivery of the curriculum and support the achievement of pupils rather than the kind of pro-active questioning and professional innovation which would require external information. There is much a head teacher can do to encourage take-up of research evidence: creating the information culture and ethos to support professional learning and the evidence-based culture advocated by others (e.g. Nutley & Davies, 2000; Hargreaves, 1999) inevitably plays a role. However, beyond the issues of ethos and professional expectations there is clearly a need for support in terms of both information access and skills if changing expectations are to be fulfilled. In both these areas there is a potential role for school librarians and SLSs.

Ready access, preferably one point of access, to information which is clearly signposted and easily digested is an important factor. There is a need for better management of this information and for access to be more consistent. It is clear that physical collections are not necessarily what teachers require: though there was little evidence of awareness or use of websites designed to provide them with overviews of educational research, teachers in this study recognisd the value of the internet to provide ready access to information. There is great potential for school librarians and/or SLSs to develop local customised portals linking to key sites such as those which are currently providing research information, as well as acting as a channel for dissemination of research-based information from education authorities.

The strong preferences expressed by teachers for localised and readily accessible information defines a role for school librarians and SLSs in terms of the current awareness and selected dissemination services which some librarians already provide. Through such services they can promote greater use of research information amongst both those who presently make little use of such resources and those who are already motivated towards

greater use of external research evidence in their professional practice. While school libraries cannot be expected to provide the range of research journals and reports which would be found in an academic library, there may be scope to think more imaginatively about partnerships between, for example, education authorities, SLSs, academic libraries and professional bodies, to negotiate shared subscriptions to online sources which would otherwise be prohibitively expensive for individual schools. However, any attempts to increase provision, or introduce more effective dissemination will need to be undertaken more proactively. While recognising the *potential* of the school library and SLSs to support the information needs of the teaching profession, teachers currently associated them predominantly, if not exclusively, with services for pupils. They are therefore less likely to approach the school library to request research information to inform their own practice. If librarians are to change the perceptions of teachers about what they can provide, they first need to challenge their own priorities.

In terms of information literacy, it is clear that it is not uncommon for teachers themselves to realise that they often lack effective information strategies and that difficulties may be exacerbated when it comes to finding and using research information. While concerns were expressed about search and evaluation skills, a lower level of confidence in organising, synthesising and communicating research information or general information was suggested by the scarcity of discussion of such processes in interviews and group exercises, and further evidenced by survey responses. This is an interesting issue given that it is central to the learning process, as well as relevant to the concept of the knowledge creating school (Hargreaves, 1999).

Given recent evidence from UK schools of the difficulties encountered in engaging teachers and librarians in dialogue on information literacy in relation to the learning process (Williams and Wavell, 2001), these findings may add to that debate. Evidence suggests that the problem may not only be associated with lack of a common language to describe the same process, but may also be linked to varying conceptions of information literacy as well as teachers' lack of internalisation of the role of information in their own professional learning. If teachers' own experience is of surviving professionally on a limited diet of information from colleagues, topped up by professional journals, newspapers, and occasional research summaries disseminated to schools by government bodies, it may well be that there is a tension between information literacy in theory, which is based on an enquiry-based constructivist approach to learning, and their own real-world information experiences. This suggests, in turn, the potential for difficulty in modelling good practice for their pupils and/or potential challenges for collaboration between teachers and librarians if differing conceptions of information literacy are not opened up for debate. It may be, therefore, that time invested by librarians in teacher support may have farther reaching benefits for teacher/librarian dialogue and for information literacy development, even if this means libraries having to make some difficult decisions about balancing commitments to pupils.

It has been shown that when teachers talk about support for the use of research information, they tend to talk about support in terms of access and in terms of 'pre-digestion' of research findings. Despite admissions that their information strategies can be flawed, they rarely talk about support in terms of the development of their own information literacy. Logic suggests, however, that in conjunction with better access and organisation of research resources, improvement of teachers' information literacy could have a significant impact on the discovery, interpretation and application of research evidence in teaching practice. Extending teachers' priorities of local access, time and contextualised content to the provision of information skills support would suggest a role for those information professionals who currently work most closely with them. However, this creates further challenges for school library professionals, challenges which are likely to be greater in schools which lack a full-time professional librarian and particularly in UK primary schools where professional SLS support has been falling in recent years (Creaser and Maynard, 2005). In addition to challenging teachers' perceptions about the role of the school librarian in professional development, there is also a need for teachers to recognise the benefit of greater information literacy including the potential value in terms of time saved when searching for both research

information and general information. It is also possible that teachers may be further motivated to develop their own information literacy if the relationship with the development of information literacy amongst their pupils were to be highlighted. While the librarian has a role to play, the importance of the role that senior management and those with responsibility for teacher education have to play in developing teacher information literacy must also be emphasised. There was no evidence from the more research-motivated survey sample that teachers' confidence levels in finding and using general or research-related information varied significantly in relation to their length of time in teaching. This suggests that little emphasis has, as yet, been placed on teachers' own information literacy within initial teacher education.

As has been shown, there is considerable potential for school librarians and SLSs to offer greater support for teachers' evidence based practice. We have seen that given their own time and budgetary limitations, school librarians are currently likely to give priority to pupils. Yet this may well be seen as a false economy or, at least, a missed opportunity. If, as it appears, the teaching profession have a tendency to restrict their own information horizons to the few resources which are readily accessible in the staff room or through their colleagues, then it would seem likely that it will remain difficult to achieve the kind of collaborative teacher-librarian partnerships which have been shown to be important in pupil achievement (e.g. Smith, 2001; Montiel-Overall, 2005). The evolution of the librarian role in support of evidence-based practice must therefore be seen as part of the wider change in ethos, a more explicit emphasis on the value of research at school level to match the efforts being made to promote evidence-based practice by General Teaching Councils and government education departments, and greater efforts to make information from research relevant to the needs of teachers and their local contexts.

Conclusions

This study set out to examine the informational aspects of teachers' use of research evidence and relate these to the role of the school librarian and SLSs in the UK. In doing so it has shown that even those teachers who are motivated to use external research evidence cite problems with access and with their own time and ability to seek and evaluate research information. The qualitative evidence from samples of primary, secondary and nursery sector teachers with varying experience in the use of external research information, as well as differing levels of professional experience, suggests that perceptions of lack of ready localised access to information, lack of time in the face of competing priorities, and a lack of skills and confidence in finding and using research information may well be widespread. Given the limitations of the survey element within this study it is not possible to be sure how typical these problems are of the teaching profession as a whole. However it might be expected that the problems would be exacerbated in situations where there was even less motivation to seek out information. The problems of lack of access, time and skills have implications not only for evidence-based practice as it is being promoted by General Teaching Councils and government education departments, but also for the development of information literacy in schools. There is, therefore, a need for more research to examine the extent and nature of the underlying attitudes towards the role of information and the value of information literacy in professional development.

In more practical terms, the information infrastructure to support teachers appears to be under-developed in schools in the UK and is likely to be a further factor hampering evidence-based practice. Internet-based research sources tailored towards teachers' needs are becoming more widely available but a multiplicity of sources may well, in itself, contribute to the barriers posed by lack of time and/or confidence in seeking and using information.

Such issues go to the heart of our understanding and expectations of a modern school as a learning community in which teachers as well as pupils are confident in their ability to make the most of the wealth of information available as a result of recent ICT developments. The evidence suggests the achievement of that vision will depend on a number of inter-related factors which require input at all levels in the educational community. Head teachers and education authorities have an important role in developing a wider information culture and

ethos as part of professional learning and evidence-based practice, a culture in which the exploration of new ideas and innovative practice involves questioning and looking outward to the sources of information that reflect a wider educational and research knowledge base to complement the more inward looking reflective practice of the teaching profession. While much of the contextualising and development of professional values will happen when teachers are out in practice, teacher education institutes also have a role to play in developing the aspirations and information abilities of teachers entering practice, as well as their understanding of the potential of school librarians in supporting their own professional development.

Information professionals in schools and SLSs could do much to provide local and targeted information and skills development in ways which would develop teachers' experiences of the role and impact of information and information literacy in relation to their own professional learning. They could also provide practical solutions which might well satisfy teachers' preferences for a single accessible source through the development, for example, of localised portals with links to trusted and tailored sources, available to teachers in their own classroom or teaching base. Success of such initiatives would depend, however, on a shift in emphasis from the library as a resource for pupils to the librarian as an information resource for the school as a whole.

Further research is needed on the management of such fundamental cultural changes in the development of the school as an information community; the relationship between schools and their libraries; the skills and qualities required in school library professionals; and the challenges for schools and SLSs with relatively low levels of professional staff. However, the evidence from this study of teachers' use of research information in professional practice, suggests there is a need to look for information solutions which go beyond the provision of access to websites if they are to contribute to a more innovative and knowledge-based school.

Notes
1. Further information about these, and other initiatives in this area is provided in the education evidence web portal scoping study conducted for the Teacher Training Agency (TTA) (Sheffield & Saunders, 2004)
2. This instrument was adapted from the BARRIER scale used by Funk et al (1991) in the context of the nursing profession.

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