

# New Breed Or Different Species: Is The 21st Century Health Information Professional Generic Or Specific?

Andrew Booth

Reader in Evidence Based Information Practice

School of Health and Related Research, University of Sheffield, Sheffield, UK

[A.Booth@sheffield.ac.uk](mailto:A.Booth@sheffield.ac.uk)

## Abstract

This paper examines the requirements for the 21st Century healthcare information workforce in meeting the challenges of a fast-changing and richly diversified professional arena. It begins by briefly reviewing the new roles and opportunities presenting themselves to librarians interested in continuing to work in the health sector. It rehearses the main skills and competencies required by such roles and compare these with generic templates for information professionals. The author revisits the COMPLIANT framework (Contextual knowledge, Managerial skills, Professional skills, Learning and teaching, Interpersonal, & NHS (i.e. National health) context, Technical) skills that he and a colleague first introduced in the context of continuing professional development to support the National library of Health Programme in the UK. He also briefly outlines training requirements identified for the 2005-2006 SPECialist TRaining in clinical question Answering for Informaticists/ Librarians (SPECTRAL) project. Both initiatives, in which the author was personally involved, are set against a backdrop of wider training needs surveys. Finally the author reviews generic and specific components of the National Library for Health's FOLIO Programme to assess their competing claims, concluding with a brief description of the BREAKOUT Course which attempts to resolve this tension.

## Aim

The aim of this paper is to examine the requirements for the 21st Century healthcare information workforce in meeting the challenges of a fast-changing and richly diversified professional arena<sup>1</sup>.

## Methods

*New roles and opportunities in the health sector.*

The twenty-first century is both an exciting and challenging time to be a health librarian<sup>2</sup>. Developments are being pioneered within healthcare that may well be adopted and adapted by other sectors of the information profession. At a national research seminar organised by the UK British Library, at which I was the single health informatics representative, participants from other sectors listened with interest as I described the recent development of outreach roles. Foremost among these, certainly in the UK, are the roles of the clinical librarian<sup>3</sup> and the primary care information specialist. The opportunity afforded by such roles to pass from the library-centric environment, in which most of us feel comfortable, to inhabit the more rarefied atmosphere of the clinical team has not only enhanced the health librarian profile but has acted as a stimulus for the acquisition of new skills.

Across the Atlantic there is increasing championing of the "information specialist in context role"<sup>4</sup> – a far more flexible and versatile label than the terrible neologism, the "informationist"<sup>5</sup>. However there is much debate about the extent to which the occupants of this new metamorphosis are actually librarians, something else or some

uneasy dually-trained hybrid practitioner. Other opportunities for an extended role can be identified within the systematic review support team<sup>6</sup>, the expert searcher, the librarian coordinator of the organisation's intranet, the specialist teacher and the consumer information specialist<sup>7</sup>.

#### *Main skills and competencies required by such roles*

It would be a mistake to overemphasise the importance of these new high profile roles at the expense of the “unlabelled” but equally important changes being experienced by the “typical” health librarian on the ground. While the development of library teams, where once the one person band was the most common scenario, has taken away some frontline responsibilities these have been supplanted by greater service and staff management responsibilities. The challenge facing the “health librarian” is similar to that facing the general practitioner – the professional cannot anticipate the next challenge that they will face. It could be the n-hundredth presentation of a frequently encountered complaint or it could be the unique requirement of a very specialist problem.

#### **Generic challenges for information professionals**

Continuing professional development (CPD) has become increasingly significant for all sectors of the library and information profession over recent years. We find ourselves facing the challenge of meeting increasing user expectations. We find our employers requiring that we address concerns of quality, accountability and efficacy of practice. Our professional bodies emphasise the need to keep abreast of new knowledge. At a pragmatic level, however, we face budgetary constraints and lack of time which often prevent staff from attending training courses to develop their knowledge and skills.

The health care sector is frequently seen as an exemplar of the library and information profession as a whole. For example, the CILIP Health Executive Advisory Group report, *Future Proofing the Profession*, has argued that developments within healthcare library and information services are relevant to the profession more generally. Certainly they found this to be true within continuing professional development where the health sector ‘has supported work-based learning as one of several ways to improve skills and provide opportunities for lifelong-learning for its workforce’<sup>8</sup>. Because of the demanding audience and the requirement to support health care with speedy, reliable and just in time information healthcare has been at the forefront of developments in electronic information services. In the UK, for example, these demands have spawned the development of the National Library for Health. Turner has shown that such advances have parallels in Australia, Germany, Denmark and Finland – to name but a few<sup>9</sup>. Maclean ably demonstrates that the requirements of the e-Library in Scotland have stimulated roles among information providers both nationally and locally<sup>10</sup>.

Similarly knowledge management is widely recognised as an important concept within health organisations and, although the technical infrastructure in healthcare may lag behind when compared with the special and commercial library sector, awareness of the importance of integrating and managing explicit (typically national evidence based) knowledge and tacit (typically local best practice) is certainly greater than in other parts of the public sector. Indeed health care has witnessed recent interest in knowledge transfer activities although the role of health librarians has

become somewhat marginalised within mainstream corporate activities in this domain.

### *The COMPLIANT framework*

The requirement to blend both generic and health specific skills is clearly evidenced in a framework that we developed at the University of Sheffield in order to complete an analysis of training needs on behalf of the National Library for Health<sup>11</sup>. We wanted to characterise existing and future training provision against a broad framework that exemplified the unique blend of skills that are required by the health librarian. We came up with the mnemonic, COMPLIANT. This variously signals the domains of **C**ontextual knowledge, **M**anagerial skills, **P**rofessional skills, **L**earning and teaching, **I**nterpersonal, & **N**HS (i.e. national health systems) context, and finally **T**echnical skills. You will note that of the seven domains that we identified only one, the national health systems domain, is exclusive to health care. Contextual knowledge may hold some requirement to be familiar with the specific external and environmental drivers of the healthcare context but it is not exclusively so. Outside of these two domains the remaining skill sets are generic and might be possessed by information professionals working within other sectors. Health librarians need managerial skills to manage the staff, resources and facilities in which they are located. They also require professional skills such as the ability to codify, classify, summarise, abstract or index.. This is equally true regardless of whether they operate within a physical or a virtual – or increasingly commonly “hybrid” environment. Learning and teaching skills are fast assuming paramount importance as it is recognised that access is not the major impediment to effective use of information resources<sup>12</sup>. Next come Technical skills as evidenced in Web authoring or in advanced information retrieval using methodological filters. Finally no itemisation of requisite skills is complete without acknowledging the important contribution of interpersonal skills. Our experience in evaluating clinical librarian and primary care outreach projects suggests that these constitute an important component of any such initiative. In fact the difficulty in separating this personal factor from the service being delivered almost makes such services impossible to evaluate!

Of course a worrying aspect of this itemisation of skill domains is the observation that very little of this territory is the exclusive preserve of our profession. Indeed in most cases other professions are better at fulfilling individual aspects of this composite skill set. For example, health librarians are rarely the most qualified teachers within an organisation and as a consequence the training we offer is not usually characterised by learning aims and objectives, learning outcomes and rigorous evaluation. Indeed with the fast-track development of the Internet even professional skills – for example in cataloguing or coding - become either the domain of the information technologist or are rendered potentially irrelevant by the increasing sophistication of powerful search engines.

### **Box 1 The COMPLIANT Skills Framework**

Contextual knowledge	[Specialist]
Managerial skills	[Professional]
Professional skills	[Professional]
Learning and teaching	[Professional]

Interpersonal	[Professional]
& NHS Context	[Specialist]
Technical	[Professional]

Revisiting this framework almost five years later I cannot help but wonder whether the technical skills component receives inordinate emphasis. It is not, of course, that technical skills are unimportant – quite the converse in fact. It is simply that most of these skills have a very volatile training half-life and are therefore perhaps too time-limited to command a permanent place among the requirements for our profession. This is particularly the case with an increasing emphasis on technical functionality for the end user. With a few well-tutored clicks a user can construct, via a tool such as Google, site-specific search engines, a personalised search page and gadgets such as a to do list, a text translator and a set of person-specific RSS news feeds. Consequently, in contrast to ten or fifteen years ago, there are very few technical skills that remain the exclusive province of the health librarian.

So what would I suggest as an alternative to this Technical domain? From our own experience in providing intensive research support and e-learning courses it seems that a knowledge of available social networking tools such as blogs, wikis and podcasts would prove most useful<sup>13</sup>. By this I do not mean technical skills in use of such tools (in fact very little technical knowledge is actually required) but rather a good comprehensive knowledge of the purposes for which they might be used<sup>14</sup>. The health librarian of the immediate future will probably inhabit a Facebook community, use Citeulike to share useful references and will occasionally visit YouTube and MySpace. But these are the technologies of the moment and could well be supplanted within the next two or three years. We will therefore need to keep up with, if not ahead of, the next technologies that are yet to appear<sup>15</sup>. For this reason COMPLIANT should now read COMPLIANCE with the T for Technical replaced with the CE of Continuing Education! After all, if, as health librarians, we fail to meet the very present challenge posed by COMPLIANCE then there is a very real danger that we will be settling for the alternative - COMPLACENCE!

### **The SPECTRAL Project**

More recently we have conducted a further training needs analysis (2005-2006) – this time for the very specific role of clinical question answering - on behalf of the UK National Knowledge Service. The **SPEC**ialist **TR**aining in clinical question Answering for Informaticists/ Librarians (SPECTRAL) project aimed to “develop detailed proposals for specialist training in clinical question answering for informaticists/librarians”<sup>16</sup>. SPECTRAL was one of a series of projects on clinical question answering services (CQAS) designed to support the improved electronic access to resources, available via the National Library of Health and the NHS Core Content, with information specialists skilled at answering clinical questions. This includes staff from specialist national services such as the National Primary Care Question Answering Service as well as local staff in clinical librarian roles. Obviously the specific need to answer clinical questions is a powerful driver in shaping our training agendas<sup>17 18</sup>. However we found that provision of courses to meet this need is fragmented and uncoordinated. I suspect that this is true of provision in most other countries where there is a general pattern of isolated examples of excellent individual courses but no coordinated attempt to join courses up into a coordinated programme

of skills acquisition. In reviewing the training needs of these information staff we conducted a rapid literature review to include some of the specialist training programmes such as that run by Vanderbilt University in the United States<sup>19</sup>.

Although the brief of the SPECTRAL project was very much to develop a picture of the specialist needs of a clearly-defined grouping of information staff we recognised that it was necessary to look at the “supply” end of the skills market, that is the requirements of the generalist health librarian who might well be required to move into more specialist roles in the future. Full findings from the work are available in the report and we plan to showcase them in a future article for *Health Information & Libraries Journal*. However I shall briefly review some highlights as they relate to the theme of this presentation.

Unsurprisingly skills such as the ability to filter the literature, identifying relevant documents and then to critically appraise retrieved materials were almost overwhelmingly seen as essential. More epidemiological skills such as ranking items for the validity of their study design and summarising the evidence were ranked as less important. We suspect that this does not necessarily reflect what is actually required but rather health librarians’ perceptions of these skills. It would be interesting to ask clinicians what skills they require to support their use and interpretation of clinical evidence, focusing on their actual needs not necessarily on what they think librarians should do. I believe that librarians are more cautious in filling roles that are closer to the *interpretation* end of the evidence chain. As a consequence there is a prevailing view among clinicians that librarians are almost exclusively located at the *identification* end of that same evidence chain. Thus this becomes a self-fulfilling prophecy unless librarians, working with local clinician champions are prepared to “break out of the box” - of which more later!

The SPECTRAL project identified a clear distinction between where clinical question answering staff members located themselves within the evidence process compared with more general staff. Broadly speaking clinical question answering specialists identified themselves currently within stages 1-3 of the process and expressed an aspiration to evolve to include stages 4 and 5. Unsurprisingly generalist health librarians located themselves currently at stages 1 and 2 of the process and aspired to stage 3 only.

#### **Box 2 The Evidence Process**

1. Asking
2. Finding
3. Appraising
4. Acting
5. Evaluating

The SPECTRAL review also examined existing training provision and, along with ourselves (i.e. SchARR) the deliverer of the ADEPT and PreCEPT programmes and critical appraisal training, other training providers included libraries such as the BMA Library and specialist evidence based practice providers such as the Critical Appraisal Skills Programme (CASP) and the Centre for Evidence Based Medicine (CEBM). I

would be interested to find out whether this hybrid mix of provision by library trainers and by general evidence based healthcare trainers is familiar in your own countries.

The SPECTRAL review concluded by identifying four major deficiencies with existing provision – deficiencies that I suspect will recur time and again throughout this conference.

- (1) **Co-ordination** - need for co-ordination of courses into a single training programme, emphasising continuity and minimising overlap.
- (2) **Tailoring to specific context** – how can generic courses be adapted to specific needs of the clinical librarian?
- (3) **Management, organisation and delivery** - (e.g. standards, monitoring etcetera) for quality assurance purposes.
- (4) **Specification of competencies** - no formal attempt to map these against course objectives.

In an Appendix, the SPECTRAL team identified the possible components of a training programme. I share this as a possible starting point, not only for your own specialist programmes but also as a template for foundation training programmes for more generalist health librarian roles.

#### Box 3 What might a Training Programme look like?

Module Zero [Local]
Understanding the Health Service
Module One [Core]
Understanding context of clinical questions
Module Two [Core]
Formulating the question
Module Three [Core]
Finding Evidence – Bibliographic Databases
Module Four [Core]
Finding Evidence – Specialist Sources
Module Five [Core]
Filtering the Evidence
Module Six [Core]
Critical Appraisal
Module Seven (Pt 1) [Core]
Synthesising/ Reconciling Messages
Module Seven (Pt 2) [Optional]
Interpreting/Explaining Numerical Results
Module Eight [Core] Presenting/Communicating Results
Module Nine [Optional]
Organising/Delivering a CQAS
Module Ten [Optional]
Evaluating Your Service

In preparing the SPECTRAL project I encountered a very useful distinction between three related but quite different types of knowledge that we seek to acquire through training programmes<sup>20</sup>. You may find it helpful to follow this distinction as you listen

to some of the programmes and projects described at this conference. These distinctions are important because they not only determine what is taught but also shape how that particular type of training is delivered,

Much of our expertise requires the acquisition of *declarative knowledge* (i.e. What to do). This may well be acquired through attendance at workshops and study days. Then comes *procedural knowledge* (How to do it). The experiential aspects of this training may require taught courses with very specific technical objectives. Finally comes *contextual knowledge* (What the context requires). This type of knowledge proves very difficult to acquire within a taught course or workshop environment. This will therefore require use of techniques that provide an exposure to the “real world” decision-making context in which we will need to operate. Thus this type of knowledge may be acquired through such techniques as mentoring, shadowing or even a short secondment, where possible.

## **Results**

The results of training needs surveys reveal that demands on NHS knowledge services have become increasingly sophisticated, requiring health information professionals’ roles to evolve to include knowledge management, training in information- and evidence-seeking skills, involvement in clinical decision making and implementation of policies<sup>21 22 23</sup>. Additionally, many health library units operate with a staff of four or less, many working part-time, making it difficult to arrange appropriate staff cover and preventing information professionals from leaving the workplace for extended periods without compromising service availability. The Folio programme, sponsored by the National Library for Health Librarian Development Programme, is a potential response to such challenges.

### **Generic and specific components of NLH FOLIO Programme**

Folio (Facilitated Online Learning as an Interactive Opportunity) is a CPD programme which has to date comprised 18 different online courses. (A poster on the programme is available during the conference). Courses are free and available for all information professionals who support staff working within the NHS. Participants thus include those working in academic libraries, health charities and professional associations in addition to those actually employed by the NHS. Folio courses are delivered electronically and are designed to enable participants to undertake training in their own workplace and to learn alongside their day-to-day work.

Folio was devised in 2002 by myself in conjunction with Alison Turner, then Library Partnerships Co-ordinator for the National Library for Health. Following three successful pilot courses, the NLH commissioned a team at SchARR to deliver a two-year programme, followed by a one year extension which expired earlier this year. We are currently negotiating yet another one year extension, mainly involving re-runs of courses which were heavily oversubscribed at the first time of running.

## **Discussion**

What has been most revealing, certainly for me, is the overwhelming emphasis from the training needs analyses that govern the direction of FOLIO on generic skills acquisition. Admittedly this training is delivered within a context that is sensitive to the specific needs and challenges of the health information environment. However it

is ironic that, as one of the leading UK trainers in evidence based healthcare, very few of our courses are able to capitalise on the technical evidence based skills for which we are best known. Instead they cover topics such as *Managing Change*, *Developing Information Skills Training*, *Introduction to E-Learning* and *Marketing skills*. This reflects an interesting profile of where demand lies for work-based training certainly within the UK health sector. Incidentally this focus on generic training has had unintended benefits as we have been able to run a course on information skills training, under the rebadged label of the “FOLIOz programme” for the Australian Library and Information Association (ALIA) with a further contract for three more courses.

#### *Description of the BREAKOUT Course.*

Undoubtedly the most exciting and revolutionary of our FOLIO courses to date is the ‘Breaking out of the Box: Extending the health LIS professional role – skills and strategies’ (Breakout) course. The stimulus for this was the Chartered Institute of Library and Information Professionals *Body of Professional Knowledge* which identifies the need for information professionals to acquire:

“a range of generic and transferable skills, including computer and information literacy interpersonal skills; management skills, especially relating to human and financial resources; marketing ability; training and mentoring skills; and familiarity with research methods”<sup>24</sup>.

We believed that information professionals need guidance and support to help them to meet this demand. Being continually told to ‘think outside the box’ they need to be shown how to do this; not simply needing to *think* outside the box, they need to actively *break out* of the box. The course aim was to

‘equip information professionals with the confidence and knowledge required to meet the challenges offered by new and extended roles in healthcare information, with an emphasis on the acquisition of personal skills and strategies’<sup>25</sup>.

Including “confidence”, alongside “knowledge, skills and strategies”, is significant particularly in the context of a discussion of CPD. A major obstacle in adapting to new and extended roles is lack of confidence about moving into unfamiliar territory. The Breakout course tackles self-efficacy: ‘an individual’s estimate or personal judgment of his or her own ability to succeed in reaching a specific goal’. **4**. As a course briefing observes:

‘your own ability to break out of the box is not determined by your skills and technical abilities alone but by your perception of whether or not you can achieve your goal’.<sup>26</sup>

The Folio format is described more fully elsewhere<sup>27</sup> and involves 30 email messages delivered over six weeks, enhanced by briefings, Powerpoint presentations, exercises, buddy tasks, guided reading, quizzes, competitions, discussions and podcasts. The emphasis is on low-tech, easy access with all materials delivered using industry standard applications such as Microsoft Office suite and Windows Media Player. An outline of the Breakout course is reproduced in Box 4.



#### Box 4 Outline of the Breakout Course

Outline of Breakout course	
Week	Theme
1	Introduction: Personal qualities
2	Pursuing self-efficacy
3	Developing an extended librarian role
4	Developing a wider organisational role
5	Testing the water
6	Development and training
7	Portfolio preparation
8	Portfolio submission

#### Conclusions

I hope that the above emphasises that knowledge and skills acquisition is not enough. New roles require new approaches which in turn require new methods of teaching and training. Attending what proved a very stimulating and successful 3rd UK Clinical Librarian Conference recently I used the illustration of the mirror to observe that requirements for ongoing professional development fall into three distinct groups of characteristics. Firstly as health librarians we need to be ***focused*** (in other words we need to be aware of the specialist distinguishing characteristics that we require as health information practitioners). Second we need to be ***polished*** (that is to possess the professional characteristics that identify us as members of the generic library and information profession). Finally, and most importantly of all, we need to be ***reflective*** (i.e. to possess the lifelong learning characteristics that will equip us to identify, analyse and respond to change)<sup>28</sup>. As I have remarked elsewhere the stimulus for this reflection “can be triggered by any number of catalysts”<sup>29</sup> which include our external environment, technological developments, the needs and requests of our users and our own observations on use of our services, not simply the research evidence which has been prioritised by the evidence based practice movement. Schon (1991) claims that such reflection is essential for surviving a constantly-changing theory-practice gap – but arguably we do not wish to simply survive, we want to thrive!

Mention of mirrors reminds me of my favourite analogy which compares the barber with the surgeon. According to a BBC website “the barber’s art of shaving beards and cutting hair” dates from time immemorial. In fact “long before there was history, there were razor blades, found among the relics of the Bronze Age”<sup>30</sup>. In contrast the profession of surgery is of comparatively recent origin. Whereas the art of the barber has remained essentially unchanged over many millennia, the profession of the surgeon continues to evolve, stimulated by technical improvements and technological innovation. Wherein lies the difference between these two activities? Is it not in the building up and transmission of an evolving body of knowledge? How is this corpus developed? – surely it is through reflective practice? As a professional surgeon performs a procedure he reflects on how it might be enhanced and improved. He may invent a new version of a procedure and is perhaps rewarded by having it henceforth attributed with his name!

Will we, as health librarians, continue as barbers simply acquiring the same inventory of skills and repeating the same practices? Surely the challenge is to reflect on our practice, to build up a body of evidence based library and information practice and to communicate it to others. Conferences such as this one are thus not simply a forum for sharing our speculations on the future needs of health librarians and their training implications. More importantly they are actually a mechanism for reflection and

sharing of knowledge. To survive as a species we require more than simply *adapting* to our ever changing environment, what Cheng labels the “shifting information landscape”<sup>31</sup>. It is not even sufficient to “*mutate*” as such changes, even though more dramatic, do not equip us beyond the particular set of circumstances in which we currently find ourselves. Rather we need to be continually *recreating* our roles so that we can develop and thrive in even the most hostile of environments. Perhaps some time in the future will even trace the development of such a new species back to the EAHIL Conference in Krakow in September 2007!

## References

- <sup>1</sup> Giuse NB, Huber JT, Kafantaris SR, Giuse DA, Miller MD, Giles DE Jr, Miller RA, Stead WW. Preparing librarians to meet the challenges of today's health care environment. *J Am Med Inform Assoc.* 1997 Jan-Feb;4(1):57-67.
- <sup>2</sup> Funk CJ. Evolving roles of life and health sciences librarians for the twenty-first century. *Bull Med Libr Assoc.* 1998 Jul;86(3):380-4.
- <sup>3</sup> Tod AM, Bond B, Leonard N, Gilsenan IJ, Palfreyman S. Exploring the contribution of the Clinical Librarian to facilitating evidence-based nursing. *J Clin Nurs.* 2007 Apr;16(4):621-9.
- <sup>4</sup> Sathe NA, Jerome R, Bettinsoli Giuse N. Librarian-perceived barriers to the implementation of the informationist/ information specialist in context role. *J Med Libr Assoc.* 2007 Jul;95(3):270-4.
- <sup>5</sup> Davidoff, F. & Florence, V. The informationist: a new health profession? *Annals of Internal Medicine* 2000, 131, 996–811.
- <sup>6</sup> Beverley, C. A., Booth, A. & Bath, P. A (2003). The role of the information specialist in the systematic review process: a health information case study. *Health Information and Libraries Journal* 2003, 20, 65–74.
- <sup>7</sup> Hammond, P. A. Consumer health librarian. *Reference Services Review* 2005, 33, 38–43.
- <sup>8</sup> Chartered Institute of Library and Information Professionals. *Future Proofing the Profession: the report of the Health Executive Advisory Group*. CILIP, 2004.
- <sup>9</sup> Turner, A. The National electronic Library for Health. In: Walton G. & Booth A. (eds). *Exploiting Knowledge in Health Services*. London : Facet Publishing, 2004: 49–59
- <sup>10</sup> Maclean G (2006) Opportunity for change in the future roles for the health library and information professional: meeting the challenges in NHS Scotland. *Health Information and Libraries Journal* 23:s1 32-38
- <sup>11</sup> Lacey, T., & Booth, A. (2003). *Education, training and development for NHS librarians: supporting e-learning. A review commissioned by the National electronic Library for Health Librarian Development Programme*. Sheffield: University of Sheffield, ScHARR (School of Health and Related Research
- <sup>12</sup> Eldredge, J. D (2004). The librarian as tutor/facilitator in a problem-based learning (PBL) curriculum. *Reference Services Review* 32, 54–9.
- <sup>13</sup> Kamel Boulos MN, Wheeler S (2007). The emerging Web 2.0 social software: an enabling suite of sociable technologies in health and health care education. *Health Info Libr J.* 24(1):2-23.
- <sup>14</sup> Boulos MN, Maramba I, Wheeler S. Wikis, blogs and podcasts: a new generation of Web-based tools for virtual collaborative clinical practice and education. *BMC Med Educ.* 2006 Aug 15;6:41.
- <sup>15</sup> Partridge H & Hallam G (2006) Educating the Millennial Generation for evidence based information practice *Library Hi Tech* 24 (3): 400-419.
- <sup>16</sup> Booth A, Beecroft C & Lynch C. (2006) *SPECIALIST TRAINING in clinical question Answering for informaticists/Librarians (SPECTRAL)*. Sheffield: School of Health and Related Research (ScHARR), University of Sheffield.
- <sup>17</sup> Scherrer CS, Dorsch JL (1999). The evolving role of the librarian in evidence-based medicine. *Bull Med Libr Assoc.* 87(3):322-8.

- 
- <sup>18</sup> McKibbin KA, Bayley L (2004) Health professional education, evidence-based health care, and health sciences librarians. *Reference Services Review* **32** (1) 50-53.
- <sup>19</sup> Lyon J, Giuse NB, Williams A, Koonce T, Walden R. A model for training the new bioinformationist. *J Med Libr Assoc.* 2004 **92**(2):188-95.
- <sup>20</sup> Judd V, Tims B, Farrow L and Periatt J (2004) Evaluation and assessment of a library instruction component of an introduction to business course: a continuous process. *Reference Services Review* **32** (3): 274 - 283
- <sup>21</sup> Urquhart C, Spink S and Thomas R. *Assessing Training and Professional Development Needs of Library Staff*. Undertaken for National Library for Health, NHS Information Authority. Department of Information Studies, University of Wales, 2005.
- <sup>22</sup> Maynard, S. (2002). The knowledge workout for health: a report of a training needs census of NHS library staff. *Journal of Librarianship and Information Science*, 34(1), 17-32.
- <sup>23</sup> Urquhart, C., Durbin, J. & Spink, S. (2004). Training needs analysis of healthcare library staff, undertaken for South Yorkshire Workforce Development Confederation. Aberystwyth: Department of Information Studies, University of Wales Aberystwyth.
- <sup>24</sup> Chartered Institute of Library and Information Professionals. *Body of Professional Knowledge: setting out an adaptable framework for your changing needs*. CILIP, 2004.
- <sup>25</sup> Folio Breakout Course Web pages <http://breakout.pbwiki.com/>
- <sup>26</sup> Folio. What is self-efficacy? (<http://breakout.pbwiki.com/f/selfefficacy.doc>).
- <sup>27</sup> Sutton A, Booth A, Ayiku L and O'Rourke A. e-FOLIO: using e-learning to learn about e-learning. *Health Information and Libraries Journal* 2005 22:s2 84-86.
- <sup>28</sup> Todd, R (2003) Learning in the Information Age School: Opportunities, Outcomes and Options. International Association of School Librarianship (IASL) Annual Conference Durban, South Africa, 7-11 July 2003 .
- <sup>29</sup> Booth, A. ( 2003 ) Where systems meet services: towards evidence-based information practice. *Vine* 33 (2): 65-71
- <sup>30</sup> Blood, Bandages and Barber Poles <http://www.bbc.co.uk/dna/h2g2/brunel/A885062>  
Created: 29th November 2002
- <sup>31</sup> Cheng G (2001) The shifting information landscape: re-inventing the wheel or a whole new frontier for librarians. *New Library World* 2001 102 (1/2): 26 – 33.