Crossing the Educational Divide: Issues Surrounding the Provision and Use of Electronic Information Resources in Secondary and Tertiary Education

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The school librarian is responsible for facilitating access to electronic resources, creating an awareness of these formats, and ensuring that the pupils and staff have the skills to exploit them effectively. Traditionally, these skills have been developed within the individual secondary and tertiary educational sectors. In the United Kingdom, skills acquisition and the implications of resource provision are being considered across secondary and tertiary education. The paper opens with an account of a study of the provision and use of electronic resources in tertiary education in the U.K. and then explores the implications of research into skills transfer between secondary schools and the tertiary sector.

Introduction

There is a fundamental difference between the secondary schools' sector and further education (FE) and higher education (HE), hereafter referred to as tertiary education, with respect to provision and use of electronic information resources (EIR). A national body exists in the United Kingdom (U.K.) that has established an infrastructure to facilitate the provision of an array of EIR (including e-journals, databases, e-books, portals, and CD-ROMs) to tertiary education. There is, however, no equivalent for schools.

In the late 1980s, British universities were discovering an urgent need for networking to support their research and teaching. It was apparent that a unified approach to establishing networking across the sector would be beneficial. To achieve this, the Higher Education Funding Councils established the Joint Information Systems Committee (JISC) in 1993. Aside from its responsibility for providing a network infrastructure, a major remit of the JISC is to facilitate the creation and provision of a wide array of EIR for HE, and more recently, FE including sixth form colleges. Its remit is now described as to provide:

[V]ision and leadership, and funding the network infrastructure, Information and Communications Technology (ICT) and information services, development projects and high quality materials for education. Its central role

ensures that the uptake of new technologies and methods is cost-effective, comprehensive and well focused (Joint Information Systems Committee, 2002).

Recently, the JISC has put in place a number of initiatives to facilitate this remit. Most significantly, in 1999, collections of eight electronic formats of particular value to the tertiary education communities began to be established (including e-journals, e-books, geospacial materials, and moving images) and made available at preferential rates. These form a part of an information environment that allows students who have moved into tertiary education to find, access, and use quality EIR (Joint Information Services Committee, 1999).

JISC usage surveys: Trends in electronic information services

The JISC is also tasked with ensuring that EIR are promoted and used widely throughout academic institutions. To this end a Monitoring and Evaluation Framework was established in 1999. This comprises a longitudinal study of the provision and use of EIR within colleges and universities, one element of which - the JISC Usage Surveys: Trends in Electronic Information Services (JUSTEIS)—has been directed in part by the authors. Another part has been undertaken by colleagues at the University of Northumbria in Newcastle (Rowley, 2002; Urquhart, et al, 2003). JUSTEIS was conceived as a series of five annual studies and comprises two strands:

- Strand A: a survey of information and library services (ILS) websites to determine EIR that are made available to those user groups

- Strand B: a survey of undergraduate and postgraduate students, academic staff, and ILS staff to discover what EIR they use, and the purpose for which it is used.

Methodology

Strand A involved a manual analysis of 190 ILS websites to determine both their structure and the range and number of EIR offered. Critical incident technique and critical success factors approaches comprised the primary methodology for Strand B. Structured face-to-face interviews were conducted with the survey populations during which the critical incident technique discussion covered a recent information-seeking incident, detailing both the reasons for the search and the resources used. In the critical incident portion of the interview, students were asked about one recent information-seeking activity that involved the use of a computer. They were asked for, and prompted to give, as much information about this incident as possible: why they needed the information, how long they took, what help they received, and what EIR they used. The situations of information-seeking explored are those that are memorable, a critical incident, and therefore more faithfully recalled. The technique focuses on user behaviour in one particular incident and can be used to explore the antecedents, the purposes of the search, the actual processes involved, the outcomes and what was done with the information acquired. To complement the interviews, questionnaires mirroring the interview schedules were distributed to a further cohort of students and academic staff. All interviews were recorded and subsequently transcribed and analysed using NUD*IST, and the questionnaires were analysed using Excel and SPSS.

Throughout the five cycles, a sampling frame was used to ensure that various types of tertiary education institutions were included in the Strand B survey. A multi-stage cluster sampling approach was used to provide a range of departments evenly split among five

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disciplinary clusters: pure and applied science, mathematics and engineering, pure and applied social sciences, arts and humanities, and clinical medicine. The study has surveyed in excess of 130 institutions, and 1,320 students and staff.

Results

The results of the first four cycles of this research consistently raised a number of worrying issues. They revealed that, whilst there was comprehensive provision of a broad array EIR, undergraduate and FE students in particular were not making use of the full range of EIR. Indeed, to a very large extent, their work was found to be dependent on a very narrow range of often inappropriate resources – Internet search engines and e-mail. Figure 1, showing data from the fourth cycle, demonstrates this gulf between provision and use by undergraduate students , data which are almost identical for FE students. A high percentage of students appear to be ignorant of many of the more formal EIR, such as e-journals, gateways and databases. Even the more obvious resources such as locally-networked CD-ROMs ('Local EIR') are hugely under-exploited.
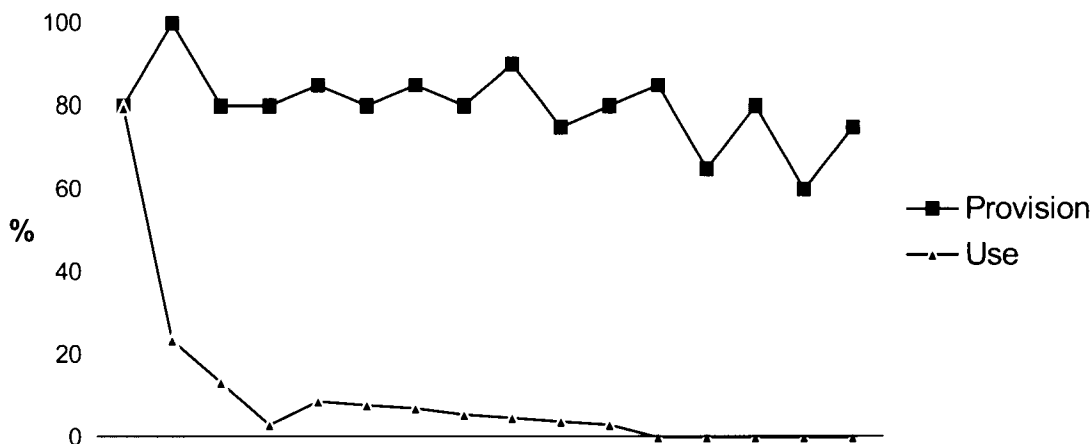

Figure 1: JUSTEIS Cycle 4 comparison of EIR made available with use by undergraduates

For all EIR, there is little evidence of coherent search strategies used by students, and it is clear from the survey that only a low percentage of students consult ILS staff (7.7%) or attend information skills programmes (7.0%). A major influence upon students' awareness and use of EIR can be the academic staff (31.5%), who consequently need to ensure that students are offered structured guidance with clear expectations for academic work. Our research concluded that many students lack the necessary information skills to exploit these resources effectively.

The results of this longitudinal study suggest that the students' lack of awareness of EIR and limited information skills might well be a partial consequence of gaps in training/exposure in the secondary sector. This issue was not addressed by the JUSTEIS project but led the authors to develop a working premise that secondary schools may not be inculcating a sufficient knowledge and skills base for pupils moving into tertiary education. A second premise formulated was that cross-sectoral cooperation might benefit students, both

while they remain in secondary schools and after they have moved on to tertiary education. Both premises suggested to the authors a need to approach the JISC with a proposal for further research.

CrossEd

Genesis and Aims

In October 2001, the authors submitted a discussion document to the JISC. The document outlined a potential investigation into the possible transferability of knowledge of EIR (such as databases or e-journals) and associated information skills from the secondary to the tertiary education sector in the U.K. Since no study had been undertaken into these issues, and given that there was scant evidence in the literature of cross-sector activity, the JISC decided in February 2002 to fund a Scoping Study (Lonsdale, Armstrong, & Eyre, 2002). The study, CrossEd, takes cognisance of the different education structures in England, Northern Ireland, Scotland, and Wales. Initiated in March 2002, it was conceived in two phases, the second ending in Spring 2004, and had two aims:

- To investigate formal and informal links between the secondary and tertiary education sectors in skills development and transfer, and

- To determine the need for research into associated areas.

Methodology

A comprehensive literature search and review was conducted to address both of the above aims. The paucity of secondary literature meant that the majority of documentation located comprised grey and official literature.

To satisfy the first aim, an e-mail survey of all libraries in tertiary education was undertaken using the Society of College, National and University Libraries and Colleges of Further and Higher Education e-mail lists. The primary purpose was to ascertain the degree of cross-sectoral collaboration currently taking place in the U.K. A secondary aim was to compile a list of ILS professionals willing to take part in structured telephone interviews. In total, 82 responses were received, of which 67 were from HE sector (41.1% return rate). Given the poor response from the FE sector, the decision was taken to conduct interviews only with HE institutions. Data from the questionnaire were entered into Excel for analysis; data from the telephone interviews were analysed manually.

To determine the need for research into associated areas, a further survey was undertaken of key government and professional institutions representing ILS, secondary education, and tertiary education (e.g., Department for Education and Skills, British Educational Communications and Technology Agency, JISC, Teacher Training Agency, Re:Source). A stratified matrix of organisations across all sectors in England, Wales, Scotland, and Northern Ireland was developed. Data were collected by means of telephone or face-to-face interviews with senior representatives of the 80 organisations identified. In order to structure the content and at the same time to allow a pre-interview briefing, an interview schedule covering the background and the main discussion points was developed and

distributed by e-mail. Detailed notes were taken during the interviews as there was no time within the project for the typing of transcripts from taped interviews.

Results: Cross-sectoral activity investigation

At the outset of the Scoping Study we conjectured that there should be a logical progression of information skills from secondary education to the FE and HE sectors and that this could be facilitated through cross-sectoral activity. The research was specifically concerned with the strategy skills involved in seeking and using information – information literacy, a concept often lost in the ubiquitous 'IT', 'C&IT' and 'ICT' used in official papers, which tend to imply the purely technical skills.

The case for cross-sectoral activity is articulated in the literature and lies at the heart of a number of national initiatives. Implicit in Getting on With IT – Post-16 Learning Strategy is the need to consider the 16 to 19 age group which, by implication, raises cross-sectoral issues. "As an immediate first step, the Government should prioritise the following groups when implementing ICT as a basic skill: young people 16-19 in full or part-time study" (Post 16 E-Learning Strategy Task Force, 2002, p. 14).

Another significant initiative is the newly emerging 14 to 19 agenda that emphasises the significance of students working in different educational environments outside of the school (Department for Education and Skills, 2002). It underlines the need to centre on individualised learning, and the concomitant necessity of building appropriate learning packages with associated skills training to satisfy the individual needs of the student. Implicit in this agenda is a requirement for bodies representing the different sectors to explore issues of transferability of skills.

The concept of Widening Participation in HE promulgated in the U.K. is a natural catalyst to cross-sectoral activity. Respondents to the HE survey cited examples of collaboration associated with widening participation. Only one higher education institution (HEI) has a librarian whose brief explicitly includes Widening Participation activities, although another has a librarian who is half-time dedicated to secondary school relations. However, seven more HE libraries gave widening participation or easing the transition to HE as a purpose of their activities with schools.

Within the ILS sector too, the notion of cross-sectoral activity is enshrined in the recent report of the working group on library provision for children and young people:

> *The development of information literacy skills needs to be synthesized... Early years' library staff, public library staff as well as schools, FE and HE have key roles to play. Approaches need to be co-ordinated and strategies integrated. At present few secondary school libraries try to build on what has been developed at primary level, and few colleges have an awareness of how information skills have already been taught to their students. Different approaches at different levels fail to build on past achievements (Chartered Institute of Library and Information Professionals [CILIP], 2002, p. 40).*

Involvement with collaboration projects between secondary schools and tertiary education is in itself an acknowledgement of the importance of cross-sectoral communion. In the HE survey, over half (50.75%) of the institutions which responded have some form of link with local secondary schools. Of all those which do offer some form of collaboration

with secondary education, training in information skills (either general skills or with specific reference to electronic resources) is offered to:

- pupils (40%);

- teachers (28.57%);

- school librarians (28.57%).

The following excerpts from the questionnaires reflect just a few of the different approaches being taken by HE institutions as a part of their work with the secondary sector and emphasise the existing concern and commitment for involvement in cross-sectoral activity:

I am offering a reduced external membership to partnership schools in order to develop links with them. I think it is a very good idea for there to be more communication between schools and HEIs in the area of information skills.

We are currently preparing a research project with X High School Library, Z City Libraries and possibly X Partnership to investigate IT and Internet use by school pupils there which would inform IT and information-seeking skills training needs both in school libraries.

Intending to contact librarians in our partner schools (Catholic secondary schools in X) to discuss information skills provision. Probably next academic year.

We currently arrange access to Sixth Year Pupils from local schools. As part of this arrangement, we give tutorials explaining how to use our online catalogue and MERLIN, our information gateway. Pupils are encouraged to access MERLIN from home or at school (no access is permitted for online databases or e-journals).

The broad contextual arguments for cross-sectoral activity, found in the literature and manifest in the survey, are complemented by a range of specific issues identified by respondents of the HE survey and bodies interviewed during the Scoping Study.

One primary issue concerns the possibility of a natural transition of a skills base from secondary to tertiary education. This reflects, to some degree, the work being done in the schools sector in certain regions, for example, Northern Ireland, where there is concern to develop a continuum of skills across four key stages from the ages of five to eighteen. The notion of transitional routes was also reflected in Getting on With IT – Post-16 Learning Strategy, which "identified five main problems and challenges in delivering ICT as a basic skill" including the "lack of clear educational/skills progression routes" and "too many unconnected initiatives" (Post-16, 2002, p.15).

In England and Wales, the implementation of the Key Stage 3 Strategy for ages 12 to 14 years has had a significant impact upon the development of ICT skilling. The skills are now clearly embodied within the ICT and English strands and the teaching and learning framework, and the strategy should now ensure that the skills are taught more consistently. In England, ICT skills are also embodied in Key Stage 4 for ages 15 to 18 years although this is not the case in Wales. However, reservations were expressed by a number of interviewees about the degree to which information skills specifically—as opposed to general ICT—are embodied in the strands. Responses such as the following are indicative:

Schools are much less good at consciously developing information skills.

I would expect ICT capability but nothing more" ["nothing more" is referring to information skills]

The idea of creativity and thinking skills is quite revolutionary to some teachers - schools do not tackle strategy and information handling.

There is teaching on how to use the Internet and search engines but no underlying skills.

I doubt if there is an explicit knowledge of information skills, and types of EIR are not embedded in the list of skills.

The degree to which young people are equipped with the requisite information skills for tertiary education is not articulated in the Strategy. A number of respondents, in discussing the state of information skills provision in the secondary schools sector, noted that there was little cognisance of need to ensure that the skills base equips children for tertiary education. Although examples of children being prepared for the challenges of post-secondary education were cited, this was usually dependent upon the initiative of individual teachers and the teaching of these skills ceased when the teachers moved on.

A second issue concerns the significance accorded to 'out-of-hours' learning. This is manifest in a variety of activities, such as homework clubs and literacy summer schools, and is attracting considerable attention within both the teaching profession and educational research. Several interviewees intimated that the potential contribution of this field to the development of information skills should not be ignored.

Whilst a case for skills transfer was clearly articulated, a major consideration raised by some respondents centred on the questionable rapport between schools and tertiary education in respect of understanding the skills base. For example, one interviewee said that universities were "massively misjudging the skills of incoming students [expecting a uniformly low level] and consequently patronising students in the language used in prospectuses." There was perceived condescension towards the secondary sector on the part of HE, and also an acknowledgement amongst some interviewees that there are many incorrect assumptions made about children moving into universities with respect to their knowledge base and skills.

In Scotland and Northern Ireland, where there are significant programmes covering EIR within schools, several bodies expressed concern about the possible duplication of the skills base when students move into the tertiary sector (one example of a lack of rapport). There were also complaints about de-skilling in FE, which was especially manifest in induction programmes that were too basic.

One issue of particular concern cited by several bodies was the lack of communication between ILS professionals representing secondary schools and tertiary education along with a failure to understand their respective roles in supporting information literacy. It was striking that, in the HE survey, almost none of the interviewees mentioned school library staff as part of their programmes with secondary school children, although several do have specific programmes to make local school librarians aware of the HEI's resources. Arrangements are almost invariably made between secondary school teachers and ILS in the HE sector. The following questions drawn from responses made in the HE survey

exemplify the ignorance of what is happening in the schools sector and demonstrate further the concern to develop a closer rapport between the sectors.

- How much do school ILS staff know about EIR?
- How much do school ILS staff know about the level of provision in HEs?
- Why are secondary schools apparently not aware of the C&IT agenda?
- Why aren't school ILS staff doing more information skills training?
- How can communication between the school and HE sectors be improved?
- What are the most effective ways for school and HE ILS to co-operate?

There was an overwhelming positive response (99% of all survey respondents) to the benefits that could be derived from enhancing cross-sectoral skills planning and delivery and the subsequent collaboration and involvement of HE/FE ILS staff in skills programmes for school children. These benefits include

- easing the psychological stress of moving from secondary education to HE,
- helping students from non-traditional backgrounds feel more comfortable with the idea of HE,
- teaching secondary school students at off-peak times would ease the burden on HE ILS staff and schedules,
- offering students entering HE a more level playing field if some instruction were done in school, and
- facilitating greater and more appropriate EIR use in undergraduate and postgraduate education.

The above survey of cross-sectoral activity reveals that there is a small degree of activity between schools and the tertiary sector in supporting skills transfer across the sectors. Respondents suggested that it would be profitable to enhance links between the secondary and tertiary sectors but that there are significant constraints to developing such links. The evidence collected from the large array of organisations during the Scoping Study also confirms overwhelmingly the need to investigate this field further with a view to identifying mechanisms for enhancing collaboration, in particular enhancing links between ILS staff across the sectors.

Determination of additional research needs

The second aim of CrossEd was to determine the need for research into areas associated with cross-sectoral activity. In addition to identifying the need for work specifically on skills transfer cited above, the survey of key institutions representing the schools and tertiary sectors highlighted a number of fields. Three related areas were deemed worthy of investigation:

- The role of the school librarian and support staff in supporting skills development
- Initial and in-service teacher training
- E-resource provision across the sectors.

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The role of the school librarian and support staff in supporting skills development

There was a strong consensus among a broad spectrum of the organisations investigated that there is a requirement to investigate a field that has escaped consideration in the literature and yet which is potentially significant: the role of the school library in advancing the knowledge and use of EIR.

Many librarians, by virtue of their education, have an in-depth knowledge of both EIR and of information skills. Throughout the U.K. a significant contribution is made to the education process by both school librarians/teacher-librarians and the School Library Services, which operates through the public library sector (Williams, Coles, & Wavell, 2001). One interviewee noted that school librarians were often the most ICT-literate and underused persons in the school. There is anecdotal evidence to suggest that they play a vital role in providing information skills, even if, as several interviewees observed, it was sometimes difficult for them to be released to undertake their own professional development training.

Significantly, the call to investigate this area came not only from bodies associated with the ILS profession but also from the education sector. The pivotal role of the school librarian in supporting teaching and learning within the school is embodied in Empowering the Learning Community, which recommends that consideration be given to making provision of school library and information services a statutory requirement (Library and Information Commission, 2000). The recent agenda concerned with re-modelling the school workforce, which explicitly encourages the use of library personnel to support teaching and learning, gives cognisance to the need for an investigation into the role of library support. Intriguingly, the report from the Teacher Training Agency (TTA) following the Quality Assurance process of the National Opportunities Fund (NOF) training in the schools sector in England offers the suggestion that each school should have an "e-librarian" (Teacher Training Agency, 2002). It would appear that this suggestion arises from concern about the lack of time available to teaching staff to undertake appropriate searches for e-materials. The supposition is that the librarian would be best placed to collate data about e-resources and facilitate access to them throughout the school, thus raising the issue of the role of the library in supporting ICT usage and information skills enhancement.

Evidence from the survey revealed that the study should embrace the Schools Library Services (SLS) and learning support staff. The importance of including the Schools Library Services was articulated by representatives of the public library sector. Whilst there have been a number of studies into the work of school librarians and the impact of the school library on teaching and learning (Williams, Coles, & Wavell, 2001), no investigation has been undertaken into the role of SLS in contributing to information skills development for pupils and teachers. To support the development of ICT within the secondary school system in England and Wales, a cadre of learning support staff have been appointed to work with students. No research has yet been undertaken to determine how they interrelate with library staff or of the impact that learning support staff may have in the field of information skills acquisition.

Initial and in-service teacher training

Another field, which had not been investigated but was a subject of concern and elicited a substantial set of responses, was initial and in-service teacher training. With respect to the schools' sector, many of the concerns centre on the degree to which the initial teaching

training curriculum does not adequately equip the trainee teacher (a) with the appropriate skills and awareness of how to integrate and use EIR within school curriculum subject fields and (b) of how to inculcate information-seeking skills amongst students. The point has to be made that, during the last two years, newly qualified teachers (NQTs) are better skilled in ICT than previously, but there remain concerns centred on the integration and use of ICT. A recent survey for the TTA suggested that NQTs are not sufficiently skilled in three areas: issues associated with behaviour, ethnicity, and the ability to use EIR within teaching.

Consternation was also expressed about the diversity of training offered to student teachers by the different education departments and schools. There was equal concern about instilling confidence as well as competence amongst trainee teachers and NQTs reflected in the following responses:

Teachers are not good at deciding how and why to use ICT – [they] have no clear recognition of what ICT is for.

[There is] nothing on evaluation of resources.

Skills may be technical-based with no evaluation of EIR skills.

Individual teacher skills are very patchy. [A] Critical factor in what is passed on is teacher awareness and confidence.

Teachers were unable to see how ICT could be used in their subjects - they are not given the time or the support to develop the skills.

NQTs should be the vanguards of ICT development in the schools, not fearful. They should have an informed and considered view and contribute to, and impact on, the debate about where the school is moving in respect of ICT.

One person suggested that "pupils seem to know more about information skills than their teachers, so who is to teach them?"

Throughout the discussions, equal concern was expressed for continuing professional development, and this, too, is identified as a critical issue in the literature:

On the basis of the studies and deliberations noted above, we recommend that the Council arranges for the development and provision of substantial programmes of continuing professional development to ensure that all staff involved in the management, delivery and support of learning have the necessary knowledge and skills to implement effective e-learning developments (Learning and Skills Council of England, 2002, para 101)

Whilst acknowledging the contribution made by NOF initiative to in-service training, a number of reservations were expressed: "NOF money hasn't done as much as hoped in terms of how to use ICT [in subjects] – much less impact than hoped. Training tended to be very undifferentiated and very skills-based – didn't engage in how to use ICT in [subject]." Another interviewee noted that the training did not extend beyond the technological skills to information skills or to embedding skills in classroom practice. It was recognised that the vast majority of teachers would need to consolidate their skills during the post-NOF period.

Perceptions on this issue were also expressed vociferously by representatives of the ILS profession who intimated that "skills which librarians take for granted are not available to teachers" and that there is much anecdotal evidence to suggest that school library and SLS staff play a not insignificant role in training teachers to exploit EIR. The comments of our

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respondents are supported by the official literature: "We have identified five main problems and challenges in delivering ICT as a basic skill: [including] ... limited capacity of the system including skill level of teachers and trainers" (Post 16 E-Learning Strategy Task Force, 2002 , p.15).

Two further dimensions to that of information skills training within initial teacher education were articulated by interviewees. The first relates to the nature of IT equipment and online access which is available to trainers and trainees in departments and colleges of education. It is four years since the last major upgrade of equipment, and disquiet was expressed that considerable variation exists between training departments in respect of this infrastructure, and in some cases, online access was perceived as inferior to that offered within the schools. The second issue surrounds the influence of the home on the trainee teachers' use of ICT and on inculcation of information skills, a field that was deemed ripe for investigation.

It must be emphasised that such concern was not shared by those representing Northern Ireland where there appears to be close synergy between the e-learning strategy, which has been and continues to be put in place in the schools sector, and curriculum development in initial teacher training.

E-resource provision across the sectors

The final area which was identified as being suitable for investigation concerns provision of JISC-negotiated or similarly subsidised EIR to secondary education. During the initial stages of the Scoping Study, the decision was taken to extend the range of survey populations to include bodies that were responsible for the provision of EIR to tertiary education because in the e-mail HE survey and in several early interviews respondents had highlighted concerns about content and licensing. Although the literature did not make significant reference to the issue of cross-sectoral resource provision, it is implicit in a number of central reports that the Task Force "believes that in order to make e-learning an attractive proposition, individuals need access to ... **content that makes learning worthwhile and stimulating**" (Post 16 E-Learning Strategy Task Force, 2002, p.13, authors' emphasis).

The consequence of the JISC's involvement with the FE sector has been the increase in e-resources for that sector, which includes all post-16 age groups, through access to the eight collections of EIR. Publishers have responded to the need with a rich diversity of electronic material. In the field of emerging e-books, for example, at least one publisher (ProQuest) has indicated its intention to extend publishing to include curriculum material for those students undertaking the General Certificate of Secondary Education. However, a significant anomaly exists whereby the JISC make available EIR through preferentially-costed subscriptions to the sixth form colleges for which it is responsible, while the same material is unavailable in school sixth forms as the JISC has no remit for this sector. While publishers may market directly to schools, licensing would be at commercial rates rather than the more advantageous JISC contracts. One major national supplier and creator of materials for schools indicated that they would see benefit in "upstreaming their relationship with the JISC" suggesting that it would be a valuable exercise to explore the existing and potential synergy between commercial e-material producers and the JISC and to extend the JISC's experience and expertise into the new sector.

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A similar sentiment was echoed by another provider, which indicated that it already worked in a small way with local education authorities to provide materials for schools and that it would be interested in extending this activity. The provider is also beginning to work with public libraries under a policy of widening access.

Although key bodies were surveyed, there was insufficient time in this study to scrutinise all of the bodies producing e-materials for secondary sector. Concern was expressed by a number of interviewees that there appears to be no strategic overview of e-resource development by the major players such as Combined Higher Education Software Team (CHEST), People's Network, National Grid for Learning, Culture On-line, Curriculum On-line, the regional consortia, and in the light of the above comments, the JISC. Other interviewees also bemoaned the lack of "joined-up Government." The situation appears to be exacerbated by uncertainty as to whether the model for content provision should be supplier led, demand driven, or a mixed market.

A further issue articulated by several interviewees concerned the need to explore issues associated with the potential extension of licence agreements to the secondary education sector. One dimension relates to the revision of the definition of 'users' in existing FE/HE licences to allow the use of their EIR by local secondary schools. A second dimension is the need for a body, such as the JISC, to provide a model licence for the secondary sector.

Conclusion

Unequivocally, the results of the five-year JUSTEIS project have revealed that there is significant under-use of EIR by tertiary education students in the U.K. The research has also demonstrated the need for academic institutions to enhance information skills to justify the rich array of information resources being offered.

The CrossEd research has identified the potential benefits of cross-sectoral activity between schools and tertiary education in information skills transfer. Given the complexity of this, it has also been acknowledged that further investigation into this specific field is necessitated. As a consequence of this project, and following the submission of the report, the JISC has recently appointed an individual with responsibility for cross-sectoral activities and it is anticipated that their remit will act as a catalyst to developments in this area.

The JISC has also acknowledged the importance of formulating research proposals to facilitate the investigation of three additional areas: the role of the school librarian and support staff in supporting skills development, initial teacher training, and e-resource provision across the sectors. The authors are currently in a second phase consulting with funding bodies to initiate the proposed research.

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