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iKnow: Information skills in the 21st Century workplace

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Abstract

The iKnow (Information and Knowledge at Work) project at The Open University (OU) set out to explore and articulate the information skills requirements of the 21st century workplace. Although some existing research had highlighted the costs of ineffective information searching in the workplace, there appeared to be little online material to remedy this. The project was run in three phases, which involved identifying the key competencies, developing some prototype 'bite-size' materials and piloting them for their effectiveness in a variety of workplaces. The results of the study show that participants not only perceived the skills as relevant and useful, but also found that the bite-size model made training easier to schedule into a working day. The project team found that these materials could potentially be an important link between informal and formal learning, of particular relevance in the current economic climate.

1 Introduction

The high level skills required to search, analyse, share, learn from, and manage knowledge and information are key to the development and employability of the individual in the 21st century workplace, as well as to the UK economy as a whole. As Kirton and Barham (2005) put it: "the ability to effectively use information, including locating, evaluating, storing, retrieving, communicating, is vital to the success of any organisation".

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At The Open University Library we had been addressing these information literacy (IL) skills in an academic context for some years. But what about learners in the workplace? We knew that most of our students were also working full or part time. Did they have the skills to complete certain information-related tasks at work? What were the skills gaps? How should IL be defined in the workplace?

The iKnow project ‘Information and Knowledge at Work’ (Open University, 2010) was a joint endeavour between Open University Library Services and the Centre for Outcomes Based Education (COBE) and took place between April 2008 and April 2010.

The aims of the project were to:

1. explore and articulate the information skills requirements in the 21st century workplace;
2. develop and pilot some generic learning materials to address these requirements;
3. test our theory that a bite-size model of learning would be most effective in the workplace.

The project drew on, and was supported by previous internal research undertaken by Foundation Degree Forward (FDF) to identify key workplace skills for different employment sectors (HEFCE, n.d.).

The project team identified six core IL skills areas as relevant to the workplace:

- the ability to conduct effective searches for information;
- an understanding of how to locate information quickly and effectively;
- a knowledge of how to measure the quality of the information found;
- the ability to deal with large amounts of information;
- knowledge of how to manage information in the workplace, in accordance with legislation;
- knowledge of how to keep up-to-date with information.

We wanted to find out whether:

- these skills were recognised as necessary to ensure effective working practices in the workplace;
- employees were competent in the skills identified;
- there were any skills gaps that the library could address using a bite-size model of learning.

Throughout this article reference is made to ‘the project team’, ‘employers’ and ‘employees’. These three terms are defined as follows:

- **Project team:** a team of specialists within the fields of e-learning and information literacy, and authors of this article;
- **Employers:** senior managers representing companies taking part in the study, and the companies themselves;
- **Employees:** individuals employed within participating companies.

2 Method

The iKnow project was run in three phases:

- Phase 1: Identifying the key information literacy (IL) workplace competencies through a literature review, a workshop with internal university stakeholders, and interviews with four diverse employers. This was followed by the development of twenty-one prototype learning activities.
- Phase 2: Gathering feedback by testing the prototype materials with two large employers and running two focus groups. A second iteration of the learning materials was developed based on this testing. New materials were developed in response to focus group comments, resulting in a suite of twenty-seven learning activities accessed via a web interface or mobile device.
- Phase 3: Evaluating the impact of the pedagogy and practical application of the materials in the workplace with employers and employees at six companies of different sizes and types. By impact we are referring to the extent to which the online bite-size method of delivering learning materials enables the learner to develop the skills mentioned above in the workplace.

Participation was enabled with the agreement of employers for their employees to take part in the study. Evidence was gathered from feedback provided by employers and employees using a variety of methods: workshops, focus groups, interviews and questionnaires.

2.1 Phase 1

This first phase involved an initial review of the literature on workplace information needs and skills. Two papers were particularly significant as they attempted:

- to quantify time spent on information literacy activities, including time spent searching for, but not finding, information (Feldman *et al.*, 2005).
- to attribute costs to the time 'wasted' in this searching for, but not finding, information (De Saulles, 2007).

De Saulles links the time and effort wasted on unsuccessful searches to a lack of information literacy skills in the workforce. It could be argued that, by improving the information literacy skills of their employees, companies would save both time and money. This point is reinforced further by Boyd, in his opinion piece on

the IDC report by Feldman *et al.*, when he comments starkly that: “Employees spend a huge amount of their time looking for information they can’t find, or recreating information that already exists” and bemoans the cost of this lost productivity (Boyd, 2005, para. 10).

As part of this initial research we conducted a study of job descriptions and grey literature. The job descriptions were selected from adverts appearing on the Prospects (Graduate Careers) website during 2007 from a range of employers of different sizes and types (Prospects, n.d.). Sectors represented were advertising and marketing, legal, counselling, finance, publishing and transport, while roles included graduate level as well as administrative, technical and professional. We wanted to examine whether information skills were explicitly required by employers and how information-related activities were described. It is worth noting that for certain jobs, for example, trainee solicitor or advisers from charities providing guidance on money, legal, consumer or other such issues, where finding and using information would be of key importance, it was not explicit in the adverts. Indeed, in most cases information skills had to be inferred from more generalised statements about analytical, communication, or organisational skills.

A list of statements involving the use of information at work was drawn from the job descriptions we analysed. They are as follows, with the IL skills elements identified in brackets:

- “High level of integrity when dealing with confidential information” (Value and context of information);
- “Maintain data on the corporate ERP system” (Organisation of information);
- “Collect and analyse data for campaigns for business units” (Finding information);
- “Summarizes data for the production of tables charts and graphs” (Creating and using information);
- “Fluent and competent with the web and all its potential” (a rather high ideal!).

We followed this with a workshop with OU internal stakeholders to explore further the IL skills elements described by the first aim of this research, and to help determine which information skills could be focused on for this project. Workshop participants were from the Library, the Centre for Outcomes Based Education and the PBPL CETL (Practice-based Professional Learning Centre for Excellence in Teaching and Learning). They were asked the following questions.

- How do we frame these skills and processes in a language that is relevant and understood in a workplace context?
- How do we make sure that skills learnt can be transferred to a workplace setting?

With regard to the first question, there was discussion about the meaning and use of the word “information” in a workplace setting. As Anne-Maree Lloyd (2010) points out, “information” and “literacy” are both problematic terms which are open to different interpretations according to the context. In particular it was considered important to be flexible about the sources of workplace information, since information may come from a variety of internal and external sources (for example, colleagues, market / competitor intelligence or sector news) and not just from online databases or websites. Lloyd refers to the way in which social and collaborative aspects of different workplaces affect the way information is perceived, valued and shared, commenting that: “Communities of practice facilitate access to tacit information that cannot be articulated through text” (Lloyd, 2010, 21).

The issue of stress caused by e-mail overload was highlighted, with the suggestion that managing information would be a good topic to address in the materials developed.

The second question is of particular significance since there is evidence that retention of generic information literacy skills is also strongly linked to context, and transfer to other ‘landscapes’ does not happen as easily as is sometimes assumed (Lloyd, 2005; Eraut, 2004). The OU’s approach to skills could be perceived by employers as ‘academic’ rather than workplace-orientated, and may transfer more easily to some workplace settings than others.

The most popular competencies selected by workshop participants were:

- selecting and evaluating sources, assessing quality, filtering the information;
- evaluating, prioritising and identifying the significance of information;
- analysing and interpreting, making inferences and deductions and understanding the significance of information;
- synthesising, translating, drawing implications and making recommendations;
- using available tools, e.g. Google, internal search engines etc.;
- managing e-mail, e.g. organising e-mail received and sent.

The final part of Phase 1 was to conduct interviews with managers in industry to gather some evidence of information use and skills requirements in a range of workplaces. We held interviews with managers from four organisations:

- an educationalist from a nursing specialist body;
- a London regeneration partnership;
- a charity providing guidance on money, legal, consumer or other such issues;
- a school head teacher.

Participants were asked to provide some background on the company or organisation and their role within it, and any obvious skills gaps. Further questions probed the kinds of information used by employees, the purposes for which information is used and the sort of training, policies and procedures they have in place to help employees with information-related tasks. They were asked how important information skills are when recruiting employees and whether learning materials on finding, organising, evaluating, using and sharing information would be useful to them.

A number of prototype learning materials to test out our assumptions were created at this stage. These are described in Section 3.

The interviews revealed wide variation between different organisations, and confirmed the findings of earlier researchers such as Lloyd (2005), who refer to the complexity of real-life settings and the situated nature of information literacy. However, some common themes emerged, for example, the problems of information overload and the need to stay abreast of the latest initiatives and policy within their field.

2.2 Phase 2

This Phase focused on testing the iKnow learning materials which had been developed in Phase 1. Two Open University departments and a government department in Whitehall participated, with employees drawn from clerical and middle management roles. Each session lasted half a day. Individuals were asked to test (and hopefully learn from) a selection of the learning activities and give feedback via a ten-item questionnaire.

The testing was complemented by two focus groups. A selection of questions answered by the participants is listed below.

- What kinds of information are useful for your job?
- Who provides the information?
- What information is crucial to do your job?
- Is it down to you as an individual to be up to date?
- Are you fed or do you seek information?
- How do you like to learn stuff for work?
- Would you want to be assessed or accredited?

The findings from the testing and the focus groups led to a programme of improvement of the existing learning materials, and the development of some new ones to meet workplace needs.

During this phase, research into self-assessment was conducted. It showed that whilst self-assessment as a means of judging skills and knowledge of specific

skills could have value, perhaps even more useful would be a holistic approach encouraging reflection (which in turn promotes 'deep' learning) and focusing on the user's own perception of their ability. The literature on self-efficacy (for example, Bandura, 1994) supports the view that belief in one's own ability to succeed in a given situation can have a strong influence on outcome. Given that workplace problems are typically complex and ill-defined (Crawford and Irving, 2009), a 'can-do' attitude and the ability to apply critical thinking are clearly important.

On the other hand, there can be an overestimation by both employers and employees of the level of information literacy skills and competencies which employees bring to the workplace. As Christine Irving (2006) puts it in her study of workplace information literacy: "as with most self assessment procedures people tend not to rate their own skills and competencies accurately".

2.3 Phase 3

Phase 3 of the project focused primarily on engaging as many employers and employees as we could, to evaluate the pedagogy and practical application of the materials in the workplace. Our aim was to test the iKnow bite-size learning model and identify employer demand for information skills. On top of this, we wanted to develop a model or tool to support employability by enabling individuals to articulate and demonstrate their information skills to existing and potential employers.

An assessment of the methodology used for the first two phases highlighted important issues that would have an impact on the methods used for the third phase. It was found that during Phases 1 and 2 the level of participation by companies and organisations was low because of time constraints during the working day, competing priorities and operational demands. During the first two phases of the project evidence was collected during interviews and workshops. Although anonymity was assured throughout the project, there may have been some reticence on the part of individual employees to provide feedback within a group situation.

The methodology employed for Phase 3 took these findings into consideration, and was designed to be time-effective and flexible, in order to enable greater participation from employees and their managers. It was thought that the most time-effective method of enquiry would be the use of short multiple choice questionnaires (see Supplementary File), delivered by e-mail and also available on the web. Two questionnaires were created. The first was aimed at employees within the workplace and the second was aimed at employers, namely managers and training staff. In addition, participants were not required to provide their names on the feedback forms.

Invitations to take part in the Phase 3 pilot study were sent to sixty-eight employers. The majority of these were SMEs, but larger companies and

organisations were also invited to participate. Potential employers were identified via online research, using sources such as the Sunday Times Best SME list (*Sunday Times*, 2009), as well as by making contact with employer engagement and business development teams across the University. In addition, many contacts were made through recommendations from individual members of staff. Initial invitations were sent by e-mail, followed by an e-mail reminder and a phone call.

Twenty-two companies expressed an interest in taking part, and participation was agreed with six of these: three large-scale companies, one small company, one museum and one educational organisation. A total of ten respondents tested the material, six managers and four employees, and all sections of the site were reviewed by one or more of the participants.

Participants were asked to work through one or more of the six sections on the iKnow website and to complete a simple questionnaire predominantly made up of multiple choice questions. The final section of the questionnaire gave the opportunity for open-ended textual feedback. Separate questionnaires were sent to employers and employees (see Supplementary File). Both these groups were asked to rate the relevance, effectiveness and quality of the materials from their perspective. Questions focussed on the following broad areas:

- the extent of existing training and the need for further training in the six iKnow skills areas;
- the relevance of these skills in work situations;
- how effective the iKnow materials are.

3 Development of the iKnow learning materials

Results from all the Phase 1 activities were used to map out some generic “learning packages” for iKnow. These were:

- finding information;
- know your sources;
- evaluating information;
- information handling;
- organising information;
- keeping up to date.

A number of ‘bite-size’ learning materials were written under each of these categories by a team of Learning and Teaching librarians and staff from the Information Literacy Unit (ILU).

Titles included:

- Planning your search;

- Finding sources of business information;
- What is good information?
- Don't believe everything you read: why evaluation is important;
- Using the 5 D's (Discard, Deal with it, Determine future action, Deposit (file it), Direct / Distribute it) to handle information;
- Read faster, remember more;
- All about records management;
- Data Protection and the Freedom of Information Act: working within the law;
- E-mail: you're the boss;
- Different ways of keeping up to date;
- Networking.

A 'Learning Object Generator' (LOG) tool was used to create some of the more text and image based activities. The LOG was an in-house developed system for authoring learning objects. It used an online HTML editor and ColdFusion scripting to allow the author to create and view the learning object as a web page. If required, it also allowed the author to 'package' up the learning object as an IMS content package for export to VLEs or mobile devices. IMS is a standard for packaging learning materials so they can be sent from one programme to another, thus enabling easier sharing and re-use (Wilson and Currier, 2002).

Other iKnow learning materials were developed using Flash and HTML, including audio and video clips, drag and drop exercises and other interactive features. In addition, some of the activities were designed for 'on the move' delivery as podcasts and learning objects optimised for mobile phones or PDAs. Two additional mobile activities were included from the mobile versions of the OU Library's IL tutorial Safari (Open University, 2009).

The learning materials were improved and further developed in Phases 2 and 3, based on the results of the tests and focus groups. The project team decided that some areas required a degree of augmentation. This could have been achieved by making some of the existing activities longer. However, in order to maintain the bite-size nature of the activities, the decision was made to provide additional 'chunks' to supplement them. This provided an opportunity to explore additional learning formats such as audio, video and interactive. These formats were used on their own or in combination where appropriate. The result was a suite of twenty-seven generic learning objects.

Interestingly, we discovered a discrepancy as to what is considered 'bite-size' between workplace and educational environments. Within education, traditionally bite-size is more likely to be seen in terms of hours. In the workplace, bite-size would be defined in terms of minutes.

Within the context of the iKnow project, bite-size has been defined in terms of an activity taking a number of *minutes* to complete. In most cases, this does not exceed ten minutes.

4 Piloting the materials with people in the workplace: feedback and findings from Phase 3

4.1 Employers' perceptions of the extent of existing training and the need for further training in the six iKnow skills areas

Employers were asked to identify which of the iKnow skills areas were already covered by current training provision within their companies. With the exception of one company, there was no current training provision in any of the six knowledge areas. The one exception identified current training provision in one area, that of information handling.

Five out of six employers stated that the iKnow information management skills were relevant to the workplace. One found them very relevant, three found them quite relevant and one slightly relevant. The other employer, from a law firm, felt the materials were of less relevance to those in jobs of a more professional nature within this field. A Learning and Development manager from this firm stated:

[I] personally found it interesting and helpful. However, on the firm-wide front, with the majority of our staff being professional lawyers, the level of ability to research and evaluate information is already very high, as this is a basic requirement for their education and their role. Therefore, iKnow would have a limited impact on most of our staff, although it may be helpful to some of our support areas.

Employers were also asked whether they would consider following up further training opportunities in the skills introduced by the iKnow project, either to fill a skills gap, or to supplement current provision. The results showed that 'Information handling', 'Evaluating information' and 'Keeping up-to-date' were the skills areas most likely to be considered by employers for follow-up training, and each of these three areas were mentioned by two employers. One employer would consider follow-up training for 'Know your sources'.

'Finding information' and 'Organising information' were of least interest, although one manager from a retail background did state that:

I think the topic [Organising information] could be very useful. We do get requests from people for help sifting through the vast amount of information that is available to people through the web.

An employer from an educational organisation was of the opinion that:

The Advanced Search options were interesting but I do feel that most people won't ever explore beyond Google simple search.

On the other hand, a Marketing and Promotions Manager from a large musical instrument manufacturer was very pleasantly surprised by what they discovered:

I could not believe the amount of 'tricks' and 'shortcuts' I learnt in the Finding Information section which can be used in my job on a daily basis. I never used Advanced Search in Google before or was aware of the currency converter and calculator, which all seem to be basic functions everyone in the workplace should be aware of.

When contrasted with the feedback from the law firm, this points to some variation between sectors, as well as between staff working at different levels. It also suggests that people may not be aware of gaps in skills and knowledge, and promoting these skills in the workplace could serve to make them more explicit.

Employers all stated that it was quite easy for staff to schedule learning into their working day and that staff would use the skills learned right away or very soon.

4.2 Employee perceptions of their requirements for information management skills development

In order to gauge their requirements for information management skills development, employees were asked about their current level of skills knowledge, how much they learnt after working through the iKnow materials and how soon they would be able to use their skills in their jobs. All four respondents felt they already knew enough or quite a lot about all the skills areas. Areas people felt they knew a lot about were 'Finding information' (two people), 'Know your sources' (two people), 'Evaluating information' (one person), 'Organising information' (one person) and 'Keeping up-to-date' (one person).

However, all of them also claimed that the materials had slightly improved their knowledge, and stated that they would be able to use what they had learnt right away or very soon.

The project team wanted to establish the transferability of the information management skills provided by the iKnow project. Employees were asked how useful they thought these skills would be for their lives in general. Two indicated that the skills would be useful or very useful in other situations. The other two indicated that the skills would be a bit useful. In all cases, respondents provided examples of situations outside of their main job where they could use these skills. These ranged from shopping online to voluntary work. An employee from an international car rental company said:

I work on a lot of external committees as well as serve as a trustee on 3 boards – so that's where I anticipate using the information in addition to work.

The results show that although those in the particular workplaces in question considered their information management skills adequate, there was scope for skills improvement. They also indicate the level of transferability of these skills to situations outside the work environment.

4.3 Employer and employee perceptions of the effectiveness of the iKnow materials

The pilot study sought to gather feedback on the nature of the iKnow materials themselves, in terms of:

- the effectiveness of using bite-size learning and option to access materials on a mobile device;
- the ease or difficulty of use.

Five of the six employers commented on the effectiveness of using bite-size learning and the use of materials on mobile devices. These five stated that the nature of both enabled greater flexibility in the training process and expressed a strong interest in seeing more learning materials presented in this way.

The questionnaire aimed at employees asked:

- how easy / difficult they found the materials;
- which functionality they found easy or difficult;
- how helpful they found the bite-size / mobile nature of the materials;
- whether they would like more training presented as bite-size chunks or provided for mobile devices.

All the employees asked found the material very easy to understand. Comments showed that the ease of navigation of the website (mentioned by two people), the audio visual elements and language contributed to this ease of understanding.

The iKnow website presents learning in a variety of formats. These include audio, video, and interactive assets. The results show a keen interest in multi-format delivery of learning content and one comment was received regarding this, by a Technical Manager from a large high-street retailer:

I liked the formats, and the way it changes, so you do not get bored.

All the employees taking part in the study stated that they found the bite-size nature of the material and the ability to access it on a mobile device helpful or very helpful. All of them also expressed a strong desire to see more bite-size and mobile learning.

A Marketing and Promotions Manager from a musical instrument manufacturer praised the bite-size model because:

it was quite easy to fit in 20 minutes per day for example. If it had been longer, say two hours, this would have been too overwhelming.

An employee from a car rental company felt that this helped them to learn:

It makes it much easier – especially having it in bite-size chunks. It's not too much information to take in at one time – so it's easily digestible.

4.4 Suggested improvements

A launch event was organised at the end of Phase 3 of the pilot study. This was attended by interested members of OU staff and by representatives from further and higher education institutions and other outside organisations. During the event, a number of attendees offered excellent suggestions for possible improvements and further developments. This was in addition to feedback received during the Phase 3 testing.

It was felt the site would benefit from an overview of the purpose, the content covered, and the benefits of using it. There should also be more content about the importance of information skills.

Another suggestion related to the language employed throughout the site. Information management skills are traditionally regarded as being academic in nature. Although the pilot study sought to show relevance to the workplace, one employer commented that some of the references seemed to be aimed at an academic audience. The example given was the suggestion that journals would be a good source of information in the workplace (listed in the 'Your information sources' activity within the 'Know your sources' section). When developing new material of this kind in future, we would want to ensure it is free of academic jargon. Not only that, but there should be an increased emphasis in the learning materials on people as sources of information and the role of informal and social learning.

A number of suggestions were made both during the workplace testing and at the launch event for a facility to provide a learning check, for instance a quiz or test. One option could be to provide scenario based quizzes relating to specific areas of learning.

It was suggested that a self-assessment tool should be added, to allow users to test their existing knowledge of, and confidence in using, the skills covered by the iKnow materials. This was subsequently developed.

Also put forward was the idea of a 'record of competence' tool to enable individuals to demonstrate their skills and achievements in their personal development plans or portfolios. Going even further, as Crawford and Irving (2009) suggest, some kind of certification could be helpful in allowing learners to benchmark and demonstrate their achievements.

5 Problems

Although a high level of interest was shown in the materials being produced, the team experienced difficulties in securing a commitment to participate in the pilot study, especially from SMEs. One member of the project team, in an internal mid-project report, provides a possible explanation for this:

small companies in a recession can't afford the time to help even though, ironically, they are the ones that need the resources most (and they are usually only too aware of that twisted dilemma).

This view is backed up by other research, such as that by Rosenberg (2002, cited in Lloyd, 2010) and De Saulles (2007) which highlights both the importance of information literacy skills – for example, evaluating information found on the internet – and the gaps which exist for employees in SMEs. Christine Irving (2006) in her interviews with employees from a variety of workplaces, including some from SMEs, found that workplace learning generally needs to be work-related and task-specific in order to be granted time during working hours.

Some interesting issues arose around the mobile learning objects, in relation to people's preferred mode of learning and also to technological barriers. Participants seemed to either love or hate the mobile activities, depending on their proficiency in using a mobile phone for browsing the internet and their feelings about learning on such a device. At the time of the pilot study in 2009, within the pilot group 'mobile' technology referred to standard mobile phones, and not to smartphones, notebooks or tablets.

Some technical limitations were also identified which hindered the use of mobile technology. The mobile learning materials were created for iKnow using auto-detect and reformat (ADR) software, developed by Athabasca University (Athabasca University, 2012). This enables the phone to format the activities according to the device. For participants using iPhones, this caused a problem as the iPhone does not recognise ADR. Instead, iPhone users would need to use the web browser to access the web-based iKnow activities. Another option would have been to create some iPhone apps, but this was outside the scope of the project.

Ideally the project team would have liked to develop case studies of people being observed using the material in order to find out how it impacts on their information behaviour. However, resources did not allow for this work to be carried out.

Last but not least, some accessibility issues were identified. In addition to the difficulties with using activities on some mobile devices, one of the participants of the Phase 3 study commented that their work computers were not enabled for sound, which also affected their ability to watch the video clips. With more time, alternatives to these formats could have been provided.

6 Discussion

The iKnow project Phase 3 findings seem to confirm our initial view that very little training in the six iKnow skills areas is currently on offer in the workplace. The majority of employers surveyed agreed that these skills were directly useful and that bite-size learning was a good way to deliver skills-based learning in the workplace. However, there is variation in how the skills are perceived in different

workplaces. This suggests that it would be useful to conduct further investigations into the needs of specific kinds of employers and types of jobs, since skills materials of the type offered by iKnow are clearly more relevant to some occupations than others.

For the OU, with its focus on online distance learning, the digital literacy agenda - which is assuming ever-increasing importance both at national level and across the OU (JISC, 2009; Bean, 2010) – offers us an opportunity to add a social layer to information literacy and to extend the conversation beyond the library community and into the workplace. Digital literacy is underpinned by critical thinking and addresses some of the interpersonal, collaborative and team-working aspects of workplace information literacy via social networking and other online tools. However it is conceptualised, one thing is certain: information literacy will only get more important during these challenging times (Sen and Taylor, 2007). Indeed it has been suggested that by 2017, information literacy will be the second most important – or in some people’s eyes the most important - workplace skill (Microsoft Research, 2008, cited by Foreman and Thomson, 2009).

Crawford and Irving (2009) suggest a strong link between adult literacies and information literacy in the workplace. This is especially relevant now, with so many people retraining to adapt themselves to the knowledge economy or to avoid unemployment. A flexible self-study resource like iKnow could help here.

However, skills-based training is only part of the equation. As Anne-Maree Lloyd (2010) points out, information literacy in the workplace is also a socio-cultural practice, involving a complex set of factors. Becoming information literate is about developing shared understandings, expertise and an identity within a community of practice. We need to map the context of different workplaces and emphasise learning by participation as well as through the development of individual capabilities. Interactions between people play an important role. A useful focus for a future project would be to explore more deeply the nature of digital and information literacy in different kinds of workplace.

7 Conclusion

Using a methodology involving participation from employers is a valuable way of obtaining accurate results and feedback regarding workplace environments. However, this approach must be used with caution, and consideration given to the time required, as very little time is available for research projects of this nature in busy workplaces, especially SMEs. We would therefore recommend using short questionnaires containing targeted multiple choice questions, which require minimal participation time.

Although the iKnow site itself cannot now be developed any further, the OU library is currently working on Being Digital, a collection of bite-size learning materials to develop digital and information literacy skills for study, work and lifelong learning. Many of the iKnow materials are being updated and altered for

inclusion on this site, which will be open to the public, and will include materials aimed at developing skills for employability. This aligns well with the OU's digital literacy strategy, which includes (as well as the learning materials on 'Being Digital') a framework to enable curriculum teams to embed digital and information literacy skills into the curriculum at all stages including the transition into the workplace.

The OU has a commitment to the provision of Open Educational Resources (OERs) and the team recommends that some of the altered iKnow content on 'Being Digital' be considered for inclusion on OpenLearn, the OU OER portal. Here it is possible to reuse and to alter materials under a Creative Commons licence. Another avenue being explored by OU Library Services is the badging and accreditation of informal learning. The 'bite-size' model demonstrated by iKnow fits well with this approach.

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