

“Let’s be careful out there!” - Learning in the world of electronic information

Liz McDowell & Alison Pickard
University of Northumbria at Newcastle, UK

Introduction

Access to information is seen as one of underpinning infrastructures and essential features of lifelong learning and is supported by government initiatives (for example DfEE, 1997). The availability of vast information resources in the electronic information world is often viewed as a positive and, indeed, liberating feature of networked learning. Claims are made that the use of electronic information enables more learner-centred approaches. If learners can undertake independent discovery and explore alternatives rather than being reliant on their teachers to provide the information they require, this provides a foundation for lifelong learning.

In this paper, we aim to challenge the assumptions that access to a wealth of information will necessarily lead to the extension of learning opportunities and better learning. We draw on data from two research projects, both of which gathered data through case studies and adopted qualitative, interpretative approaches to illustrate experiences of learning, teaching and supporting learning in the electronic information world. The Higher Education study (McDowell, 2000) was an element of the IMPEL2 eLib-funded project¹, which undertook a set of case studies across UK HE institutions. Its purpose was to illuminate the organisational and cultural impacts associated with rapid technological and educational developments, from the perspectives of academic, library and learning support staff. The school study was based on sixteen case studies of Year 10 students in four secondary schools. It formed part of a PhD investigation of the experiences of electronic information use and learning (Pickard, 1998).

Pam’s story

One of the students in our research, Pam, described her experience of trying to find information from the Internet for a school assignment:

‘ When I did Geography... I had to do some work [on the Internet] on volcanoes ... but the volcanoes just went on and on and on about absolutely everything so I had to keep refining it until you get down to what you want. It took me a couple of days, in fact I gave up and I still haven’t handed the work in. I was just so mad with it. It was hopeless - or I was. ’

Pam expected to find the information for her assignment on the Internet, but experienced frustration and failure. Many explanations and solutions might be proposed. Perhaps her IT and information skills were deficient and she needs information skills training? Perhaps her frustrations were simply an inevitable part of learning and she needs support and guidance so that she develops more confidence and competence? Others might question the nature of the assignment and ask why Pam was asked to search the Internet, apparently unaided, to research the topic of volcanoes – are there no adequate Geography textbooks on the subject? The real-life experiences of Pam and other learners and teachers provide a counterbalance to some of the overwhelming enthusiasm surrounding the Internet. The electronic information world offers

¹ Impact on People of Electronic Libraries, <http://ilm.unn.ac.uk/impel>

much that is positive and beneficial to learners, but it is nevertheless important to be a little more cautious than the popular 'hype' would suggest.

Views of the electronic information world

If we want to understand teachers' and learners' experiences of the electronic information world, it is important to identify their conceptions of it. One key feature is that the electronic information world (represented mainly by the Internet or the World Wide Web) is seen as extensive, comprehensive, perhaps even infinite. A library, or a set of encyclopaedias, however large and daunting the building or the ranks of bound volumes, has clear physical limits. People seem to have more difficulty in conceiving of limits in virtual worlds. It was not uncommon to find interviewees referring to the Internet using terms such as 'huge', 'unlimited', 'information from everywhere' (HE study) and 'loads of information', 'everything is on there' (School study). This can be an enticing prospect and the excitement of finding highly valued information is clear:

'I found loads of stuff for my Third World project in Geography. There's so much, it was great and I managed to put a really good project together' (School Study)

'We find generally that ... students are very IT literate and very good at going to find this information ... and they get it from some surprising sources at the end of the day! ... in the final year especially, our course work specification is – Impress us! – and they go away and do that.' (HE Study Academic)

On the other hand, despite the expectation that all information is out there, information is not always found. This can lead to the kinds of frustration which Pam experienced and which may just as easily be experienced by Higher Education students:

'... there's a great level of frustration when students have spent two hours and they haven't found anything. Because they expect something to be out there and it isn't always out there' (HE Learning Support Staff).

Learners may interpret this as an indication of their own inadequacy:

'I told you I was a bit stupid. I made a bit of a mess of that. I bet there's loads of stuff on there I could have used' (School study)

Even academics, seeking information for research purposes were not immune to the same kinds of concerns:

'The main problem that I find is [getting] the feeling that I have searched thoroughly enough. If I had phrased my search in another way, would I have uncovered the things that I have in fact missed?'

Another learner response was to assume that if their searching of electronic information resources did not turn up the required information, it was because the information simply did not exist, and they stopped trying to complete that learning task:

'I think the danger is that you become reliant upon simply using the technology assuming that if you enter certain key words and nothing comes up, it isn't there.' (HE Academic)

The electronic information environment is not only frequently perceived to be extensive and comprehensive, but is also seen by many students as 'fun', 'new' 'easy' and 'quicker'. Because of this combination of positive connotations, one academic felt that the Internet was seen as the 'Holy Grail', whilst a member of Learning Support staff commented:

'[Students] will say to me quite categorically, they don't want books, they just want it up on the screen, you know, and if they can't get it up on the screen they are not interested.'

In the Higher Education case studies, concerns emerged about the view of the electronic information world as all-encompassing. For example, one academic felt the need to explicitly caution students about some obvious limitations:

'I advise them to use the Web [only] as an extension of the library because anything published before 1990 is unlikely to be on the Web in my subject area unless it's absolutely fundamental.'

Other, more subtle limitations, such as the culturally restrictive nature of the Internet identified by Selwyn (1999) might be even less likely to be recognised.

Coping with electronic information

In both school and higher education contexts, learners' abilities to cope with the vast amount of information available to them was an issue of concern:

'... we tend to find that students are not very good searching for things and tend to have massive information overload on their searching strategies' (HE Learning Support Staff)

According to some views, such difficulties indicate a lack of information skills. For example, one of the school students seemed to view problems with searching on the Internet as mainly being about 'how to use it':

'... nobody really knows how to use it properly. ... they give you Yahoo straightaway and it's not really a very good search engine for educational things, it's more like for leisure and movies and stuff like that. I think that it's good that we've got the Internet because we can look for more stuff and probably find more information out but it's not really set up good. ... I don't think a lot of people understand it enough to be able to know what they're looking for and know how they're using things.'

There is an extensive literature on information literacy (Behrens, 1994; Bruce, 1999). A number of lists of competencies, and information seeking models can be found (for example, Dupuis, 1997; Kulthau, 1997; Taylor & Laurillard, 1995). In our research, a variety of approaches to helping students develop information skills were reported, some rather unstructured and reliant on 'learning by doing':

'... they have essays, long submissions, to write and they are not really told where to look. They are told to go away and look at a search on BIDS and Medline and their textbooks, and to come up with things on that basis. They are not given any specific guidelines for a particular project, usually, and what they come up with is up to them' (HE Academic)

More extended information skills courses were also discussed:

'[In the] second year modules where we are turning students into researchers and preparing them to do their dissertations, they have these sessions run by the library telling them how to use the library properly and that covers electronic and non electronic sources'

For HE staff, information skills were not only needed to deal with the amount of information available but also its variable quality. They often believed that students' limited knowledge of the field of study would affect their capacity to discriminate and evaluate:

'... because you've got the Internet, you are, obviously, now able to find an awful lot. That brings with it the associated problem of 99% of that is total rubbish. And how do you [as a student] sort out which bits you want when you don't know the subject?' (HE Academic)

There is some research to suggest that students are at least aware of the need to question the quality of information found on the Web (Hall & Dalglish, 1999). Even school students in our study at times questioned the quality of information:

'on the Internet I think it's more what people put in as themselves than what actually happened – like they might be supporting a view or something'

Approaches to teaching

It might be thought that the availability of extensive information resources would transform teaching approaches. Some lecturers gave examples:

'It becomes much easier to make it more student-centred because the students have much easier access to this data than they used to. We can put the onus for finding out what is most useful and what is most up to date on them because they are becoming used to the fact that it is out there in an electronic form'

However, in other cases, lecturers espoused the benefits of access to information but adopted pedagogic strategies which limited the need for access:

'[In the] first year, it is all neatly packaged and fairly straightforward. There is not much they can't actually do from the lecture notes and the text books that they have ... and the same is true for the second year'

Academics sometimes explained this approach by reference to students' inadequacies, such as a lack of information skills:

'what we have found is that students are not really highly developed at being able to extract information out of other sources.'

Other student deficiencies were also proposed. For example, one lecturer suggested that it was only the more able students who could be expected to use extensive information resources:

'I think the students who tend to use [electronic information successfully] are the more resourceful and probably the brighter students ...'

Others commented on students' inability to work independently:

'... perhaps the majority aren't capable of taking significant responsibility for the choices what to read, where to go, which is the problem when you move away from text books and recommending videos. It's a problem when you hit the Internet.'

Yet others referred to lack of motivation towards 'real learning', perhaps compounded by time pressures:

'The vast majority of undergraduate students don't want to work at a high intellectual level, hoovering all the information then think about it and make up your mind'

'The students don't seem to go to what I direct them to, let alone go beyond that! I don't think the students tend to read around. I think that they may be very pressed for time with their assignments.'

In some cases, lecturers did not refer to student deficiencies but saw it as an essential part of their role to present the necessary information and protect students from information overload:

'The function of a lecturer in my mind is to go out into the literature and find the information that is needed for the particular course that they are on, and distil it out of the literature and I think that the lecturer shouldn't send students out to try to find most of the information on the course. ... the lecturer's job is to do that and pop the information up for the students'

In contrast, for other lecturers it was an essential part of their role to help students to cope with diverse information:

'... part of the learning process is to acquire and analyse information'

'obviously you have to learn how to discriminate between what is useful and what is not ... it's my role to teach students how to discriminate between the useful and the not so useful.'

Approaches to learning

Academics were concerned about the impact of the electronic information world on student learning:

'I think, the ability to get a huge amount of information is quite good – can be quite astounding. But I do feel that sometimes it can be very distracting, and ... I find that people are beginning to confuse the fact that they've got a lot of information – they're putting it together – with actually understanding that information.'

Other lecturers commented on the use of material from electronic resources with very little active transformation:

'They do a cut-and-paste job ... it's all in completely different prose styles and some overlapping of content. And some bits are completely irrelevant and shouldn't be there. ... Some of it's good but some of it comes from just one or two sources. They stick this down and it's supposed to suffice as an assignment'

'At the moment we would say right, give me a 5000 word essay on landslides and we would get huge chunks of it back the same from everybody because they have just found landslides in the netsearch and found some geological survey reports on landslides and away they go.'

It may be the case that the availability of vast amounts of electronic information reinforces the idea that knowledge is 'out there' to be grabbed rather than needing to be used actively and internalised. However, we also need to consider that students are responding to the particular context in which they find themselves (Prosser & Trigwell, 1999). This is well-illustrated in the extract from an interview with a school student:

Student: *Well, I needed to find ten facts about him [Martin Luther King] and I've got ten now so that's enough.*

Interviewer: *Do you think these are the most important facts?*

Student: *I don't know. I don't really care - my homework's done. She only asked for ten facts and I've got ten.*

This is a clear case of a reproductive, task-focussed approach but school students were not incapable of attempting to evaluate information and use it more actively, when they were engaged in activities which motivated them to do so. This was often outside the school context:

'It's usually quite trustworthy, but stuff, like American stuff and riding and stuff there's things that they do that you just wouldn't do in this country. It seems wrong that they are putting it on the Internet because, well, when you get off a horse you swing around the back, Americans keep one foot in the stirrup and step down. That's dangerous because if the horse pulls away you can get dragged, the Americans always do it that way, so I think that if you're looking to start riding and you started that it would be very dangerous.'

The key factor here is the approach to learning adopted by students. Deep approaches and interest in learning tasks afford more active engagement with information and the construction of knowledge, whereas surface approaches lead towards more straightforward reproduction of information to fulfil task requirements. Some contexts fail to encourage students to see themselves as active constructors of knowledge or 'apprentice knowledge workers' (Goodyear, 1999). This situation is not specific to learning in the electronic information world but it may be that the availability of extensive information leads to changes in the nature of learning tasks so that information gathering and re-presentation become emphasised at the expense of working with information to understand, evaluate, synthesise or apply. A lecturer in Economics, who noted the prevalence of reproductive approaches amongst students, suggested the need to change the nature of the learning task as a direct result of the availability of electronic information:

'We used to, for example, give them country profiles to do as an assignment – an economic profile of a particular country. But, with Datastream and other electronic sources, they can just simply download these without any input from themselves; therefore we have to ask different questions.'

Conclusion

If learners are to benefit from the potential of electronic information, the educational context needs to enable them to do so. The strategies adopted by some teachers eliminate the need for learners to access information independently. In addition, some learning tasks emphasise the gathering and re-presentation of information rather than working with it to understand, evaluate, synthesise or apply. Such tasks can become routine in the electronic information world and fail to engage learners in anything more than reproductive, task-focussed learning. In other cases learners may be disempowered by failure to cope with electronic information, a failure compounded by prevalent views that the information now available is all-encompassing and easy to access. Pedagogic strategies which recognise that students' need to learn to cope with information and support them in doing so through appropriate learning tasks will be beneficial in developing their capacities as lifelong learners.

References

- Behrens, S. J. (1994) A conceptual analysis and historical overview of information literacy *College & Research Libraries*, 55(4), pp.309-322
- Bruce, C. S. (1998) The phenomenon of information literacy *Higher Education Research & Development*, 17(1) pp. 25-43
- Department for Education and Employment. (1997) *Preparing for the information age: Synoptic report of the Education Department's Superhighways Initiative*. London: DfEE
- Dupuis, E.A. (1997) The information literacy challenge: addressing the changing needs of our students through our programs. *Internet Reference Services Quarterly*, 2(2/3), pp/93-111
- Goodyear, P. (1999) New technology in higher education: understanding the innovation process. pp. 107-136 in A. Eurelings et al. (Eds) *Integrating information & communication technology in Higher Education*, Kluwer-Deventer.
- Hall, R. & Dalglish, A. (1999) Undergraduates' experiences of using the World Wide Web as an information resource. *Innovations in Education & Training International*, 36 (4), pp. 334-345
- Kulthau, C. C. (1997) Learning in digital libraries: an information search approach. *Library Trends*, 45(4) pp/708-724
- McDowell, L (2000) *Learning and teaching in the electronic information world*. IMRI (Information Management Research Institute) Working Paper. Newcastle: University of Northumbria, IMRI : <http://is.northumbria.ac.uk/imri>
- Pickard, A. J. (1998) The impact of access to electronic and digital information resources on learning opportunities for young people: A grounded theory approach. *Information research* 4

<http://www.shef.ac.uk/~is/publications/infres/isic/pickard.html>

Prosser, M. & Trigwell, K. (1999) *Understanding learning and teaching: the experience in Higher Education*. Buckingham: SRHE & Open University Press

Selwyn, N (1999) Virtual concerns: restrictions of the Internet as a learning environment
British Journal of Educational Technology, 30(1), pp.69-71

Taylor, J. & Laurillard, D. (1995) Supporting resource-based learning in N. Heap et al (eds)
Information technology : a reader , 4th edition. London: Pitman