Open Research Online

The Open University's repository of research publications
and other research outputs

Getting it from the Web: why and how online resources are used by independent undergraduate learners

Journal Item

Link(s) to article on publisher's website:
http://dx.doi.org/doi:10.1111/j.1365-2729.2007.00265.x

oro.open.ac.uk

Getting it from the Web: why and how on-line resources are used by independent undergraduate learners

Adrian Kirkwood, Institute of Educational Technology, The Open University, UK

Abstract

Undergraduate students access the Internet for a range of purposes, many unrelated to their studies. Increasingly, learners are using the Internet to find information and resources for coursework, whether or not this is promoted or endorsed by their teachers. This article reports an interview study that investigated *why* and *how* independent learners use Web-based resources, exploring not only the academic context of the courses studied, but also any relevant personal, domestic and employment-related circumstances. Factors were identified which enhanced or competed with study activities, acting as incentives or disincentives for learners. The findings suggest that it is not technologies *per se*, but a combination of various contextual factors that determine students' use of Web resources for learning. Of the academic factors that emerged from the interviews, assessment requirements and pedagogic approach were particularly important.

Keywords:

online learning; web-based resources; social context; pedagogy; assessment; information literacy.

Introduction

Using the Internet has become part of the everyday experience of millions of people throughout the world. Undergraduate students are increasingly using the Internet for a variety of social and leisure purposes as well as to find information resources that have relevance for their studies. However, many teachers in Higher Education (HE) seem reluctant to enable their students to exploit the academic potential of the Internet and resource collections established within the HE community are often less well used than anticipated. This article reports an interview study that aimed to investigate *why* and *how* independent learners use resources on the World Wide Web (subsequently referred to as the Web) while undertaking their normal coursework. The investigation was concerned not only with the academic context of courses being studied, but also any personal, domestic and employment-related experiences and circumstances that were pertinent.

The growth of 'networked society', particularly in western countries, has meant that people of all ages are increasingly engaging with the Internet for a variety of different aspects of their lives, for example in the course of their employment and/or education, household management, social relations and leisure activities (Cummings & Kraut, 2002). In the USA, 73% of adults were Internet users by April 2006 (Madden, 2006), and the Web is increasingly considered to be an important source of information and services. About one-third of American Internet-using adults felt that it has greatly improved their ability to do their job, to pursue hobbies and interests and to shop. In the UK, 67% of adults had accessed the Internet within the three months to February 2007 (National Statistics, 2007). A recent UK survey revealed that use of the Internet for finding information "is established and it is often the first port of call for most

types of information sought" (Dutton, di Gennaro & Hargraves, 2005, p. 6). Further, the survey revealed that among Internet users of working age, 73% felt that the Internet was important to their everyday lives.

Developments in the HE sector reflect changes in the wider social context. Students in western societies (both those progressing directly from school and those entering later in life) are familiar with the use of information and communication technologies (ICT). For example, most have used e-mail or another messaging system to communicate with friends, they have benefited from online entertainment facilities and they have acquired information from the Web for educational or other reasons. Some have considerable experience, having used a range of applications on a regular basis for various purposes. UK Government-led initiatives have prompted the HE sector to adapt to meet the needs of an increasingly digital society (National Committee of Inquiry into Higher Education, 1997; Department for Education and Skills, 2005).

Such government documents have placed greater emphasis upon learning throughout life and the need for students to become *self-directing* in their studies. Undergraduate programmes are expected to enable learners to acquire *enhanced skills* for handling the abundance of information that is increasingly becoming accessible. The term 'information literacy' has been used to refer to the operational and intellectual skills necessary to find and use information effectively: "To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989, p.1).

ICT can enhance learning and teaching in HE not only by enabling students to access a wide range of information and resources on the Web, but also by providing new forms of communication. Both of these are particularly important for learners who undertake all or part of their studies independently. Distance education students (and an increasing number of those enrolled at campus-based institutions) are geographically dispersed and do not have ready access to fellow students or to an academic library in which they can consult specialist texts and journals.

On-line resources are progressively being introduced within HE courses or within services provided for students by university libraries (see, for example, Joint Information Systems Committee, 2006). Use of such resources can provide opportunities for the development of learner independence (McDowell, 2002). Students can access bibliographic databases, on-line journals and other archives and collections through an integrated Virtual Learning Environment or alternative systems. Considerable expenditure has been made on building collections of resources suitable for HE teaching and learning and on developing systems for storing, retrieving and delivering suitable resources. Primarily, these initiatives seem to have been driven by a 'collections-based' rather than a 'user-focussed' strategy (Calverley & Shephard, 2003).

Insufficient attention appears to have been paid to two key aspects relating to students gaining access to and making use of Web resources. Firstly, what factors are likely to encourage (or discourage) students in their use of Internet information resources? Secondly, how do learners develop the information literacy skills necessary to make effective use of the multitude of resources available via the Internet? Too little concern for the educational context and rationale for students' use of on-line resources

has resulted in disappointing levels of access and use by learners (Rowley, Banwell, Childs, Gannon-Leary, Lonsdale, Urquhart & Armstrong, 2002).

Students' Use of the Internet

ICT is playing an increasing role in HE teaching, learning and administration. Many studies have reported how students use networked computers for tasks and activities **within** courses they are studying, while others have explored students' attitudes to Internet use and their practices more generally. For example, a survey of students in one Australian university found that most were making use of the Internet for course-related research, but that they had received little academic support: "As many as 43% of all those surveyed admitted that they had learned 'everything' they knew by themselves or through family and friends" (Foster, 2000, p. 172). In one Irish university over 90% of surveyed students considered the Web to be important in their studies (Murray, Hourigan, Jeanneau & Chappell, 2005) and that while three-quarters of those students who claimed to be using the Web for their studies found sites for themselves, less than one-fifth indicated that their lecturers prompted their choice. Jones (2002 p. 9) has suggested that some colleges and universities in the USA might be experiencing "an Internet generation gap between professors and students in terms of their Internet usage interests or abilities".

This particular disparity merits closer examination. The Internet was originally developed as a means by which dispersed academic researchers could collaborate and communicate outcomes (Naughton, 1999). Many HE teachers make extensive use of the Internet in their own research activities, so why are they reluctant to encourage undergraduate students to develop effective practices? While some HE teachers doubt the ability of students to evaluate the appropriateness of on-line resources they access,

there are also "concerns … expressed about judging the quality of students' work if they drew upon unknown and unregulated information resources" (McDowell, 2002 p. 262). Further, teachers could be worried that students might plagiarise much (or all) of the material for their assignments from sources found on the Web.

As Internet use becomes increasingly pervasive in many aspects of everyday life, HE teachers need to reflect on the wider social context within which students engage with technologies for learning. Developing a better understanding of why and how students *actually* use Internet resources through investigations such as the one reported here can help teachers address their concerns and make more effective pedagogic judgments.

Few studies have attempted to examine the relationship between Internet use by students for academic purposes and for activities pertaining to other aspects of their lives. Research has tended to focus on Internet use by young people who have progressed directly from school into full-time higher education (e.g. Jones, 2002). In western societies, these students have grown up with ICT and are hardly aware of the pre-Internet era; they exhibit an 'information-age mindset' (Frand, 2000) and are increasingly being referred to as 'digital natives' (Prensky, 2001). Studies of students' *self-efficacy* in the use of ICT and the Internet (Peng, Tsai & Wu, 2006) concentrate on the general attitudes and skills of individual learners in HE rather than examining any particular learning tasks or activities related to coursework.

Large-scale surveys of independent learners at the UK Open University indicate that the extent to which students who are not 'digital natives' make use of information and resources from the Web in their studies varies considerably between course modules (Kirkwood, 2006). Where they are supplementary to normal course work, their use by

students is minimal. The data suggests that students' use of Web resources is more closely related to the pedagogic design of courses and to assessment requirements, than to the increased availability of information sources *per se*.

Aims and Method

This study aimed to investigate *why* and *how* adult independent learners use Web resources while undertaking their normal undergraduate coursework. The investigation considered not only the academic context of the course(s) being studied, but also the social context: any personal, domestic and employment-related experiences and circumstances that were pertinent.

In order to develop a better understanding what learners *actually* do while studying, a naturalistic investigation of authentic learning activities was undertaken. Students were asked about the way(s) in which they made use of the Internet for their course work and to provide illustrative examples wherever possible. Distance learners study independently and they experience a wide variety of contextual factors (Kirkwood, 2000; 2003). Some factors are related to the expectations and demands of the module being studied; others to experiences and practices associated with the individual's social environment.

Personal interviews provide an opportunity to explore how students' describe and reflect upon learning tasks and study activities recently undertaken as part of their normal course work. They also allow study practices to be considered in relation to the opportunities and constraints arising from other aspects of an individual's life. The focus of attention in the interviews was student's approaches to actual learning activities to a greater extent than their generalised study behaviours.

Procedure

A sample of adult undergraduate students was drawn for interviewing, using the following criteria:

- They were studying one of four specified second-level course modules (two modules from science and two from health and social care);

- They had completed at least one year of study with the UK Open University (OU) before commencing their current module;

- They had existing educational qualifications that were at or below the level normally expected for entrance to higher education;

- They were living within the British Isles.

The second and third of these criteria were intended to ensure that the participants were neither very new to, nor highly experienced with, HE study.

The five male and five female volunteers selected to participate represented a reasonable geographical distribution, with some living in remote locations. The four modules integrated students' use of 'external' Web resources (i.e. from sites outside the university) in different ways. In one, the use of such resources formed an integral part of the course activities and assignments; in another there was an expectation that students would use the links provided to Web resources, but this was not associated with assignments. For the other two modules any use of Web resources was optional. The course modules being studied and the extent to which Web resources were integrated are shown in Table 1.

Table 1 about here

Semi-structured interviews by telephone were used to investigate each student's prior familiarity with and experience of locating and using electronic resources via the Web (using general search engines or specified links). Their approaches to using Web resources in relation to specific learning activities and tasks were also explored. Factors that encourage or discourage students' use of Internet resources during their study of Open University modules were investigated. The initial responses given by students were explored and clarified through further enquiries until it was felt that sufficient data had been collected for each appropriate interview question.

The interviews sought to contextualise students' learning in relation to any relevant experiences. These included both *personal circumstances* (domestic, social and occupational) and *educational experience* (previous courses or training undertaken). A grounded theory approach (Glaser & Strauss, 1967) to analysing the data was adopted. Notes were taken during the interviews and each session was tape-recorded. The notes were subsequently checked against the recording of each interview. Every interview transcript was read several times in order to identify emergent themes (influences) that were important for that participant in their individual context and circumstances. The accounts given by the participants were then compared to seek out similarities and differences between individuals in terms of reported actions and behaviours and the issues underlying them. In particular, the transcripts were scrutinised to establish which *incentives* and *disincentives* for Internet use, both in general and in connection with each participant's coursework. Following the analysis of all of the notes and transcripts a number of factors emerged that seemed to encapsulate relevant issues: many of these factors were common to several participants.

In reporting the findings, the participants' names have been changed to maintain their anonymity. After each quotation from or reference to an interview transcript, a code follows the allocated name to identify the module being studied at the time of the interview (see Table1).

Findings

Use of the Internet in everyday life

Each participant's use of the Internet reflected their own particular circumstances. All used the Internet for activities unrelated to their studies, such as for e-mailing family and friends and for finding information on the Web. All were familiar with using a search engine such as Google™ or Yahoo™. More than half of the participants undertook shopping on-line and several made fairly extensive Internet use in connection with their leisure activities. Two of the participants had restricted mobility and found that the Internet helped them retain social contacts and provided a very valuable 'window on the world':

> My hobby is palaeontology … I use the Internet a lot to access information … mostly Web searching … I use it for e-mail … I'm in contact with different people all over the world who do work in fossils … If I want to know something, I'll find somebody who knows something and write to them. They're usually able to give me some information and give me the answer to my inquiry." [John, S267]

However, few had ever used Chat or instant messaging facilities, nor had they participated in discussion forums or newsgroups.

Several of the participants made considerable use of the Internet for purposes relating to their occupation:

> At work I use e-mail … I'm expected to use the internal e-mail all the time. [Gerald, S205]

> I do use it at work. We have our own … the NHS has its own intranet … I have to do ordering and things like that. [Carol, K223]

While all participants made some use of the Internet for social, domestic or work-related purposes, the extent to which each used the Internet for their studies seemed to be subject to various factors. Some of these acted as an *incentive* or *approach factor* while others were a *disincentive* or *avoidance factor*. Most of the students mentioned several factors that coexisted concurrently, reflecting the complexity of their personal circumstances.

Personal Circumstances - Domestic

A degree of isolation was a critical element in the personal circumstances of some interview participants. One lived and worked in a remote location, so distance education, particularly when involving on-line communication, was particularly attractive:

> Certainly with this … course I'm doing, I wouldn't have been able to do it if I didn't have the Internet … and because of family life as well, I couldn't go down to the mainland, so it's … opened up a whole new world for us because we're able to study from home in our own time and can work as well … [Barbara, K223]

As already mentioned, some had restricted mobility that reduced their face-to-face contacts with other people. In particular, one participant [Adam, K223] used e-mail and on-line shopping extensively due to his current condition.

Personal Circumstances - Employment

For some participants, activities undertaken at work served to increase their familiarity with using the Internet. In some occupations there is a growing expectation that the Internet will be used to find relevant information and to help keep people up-to-date with recent developments in their field.

> At work I look up … If I'm wanting to find out something … you know I used to turn up the 'Nursing Times' or 'Elderly Care', but they're all now on the Internet, so you can look it up … [Barbara, K223]

On the other hand, people with busy work and domestic lives often have only limited time available for studying. There is usually no spare capacity for undertaking activities that are perceived as not being strictly necessary. For example:

> I haven't really had the time ... I have been very busy. I've been very busy at work as well, so I normally concentrate on my studies when I have free time … and I've got a granddaughter who lives in [another city], so I like to spend time with her as well [Carol, K223]

Two of the participants were not in employment at the time of the interviews; one had retired and the other was actively seeking full-time work. Both of these students had time available to pursue personal interests and the Internet played a role in their leisure time activities.

> I do use the computer a lot for other things apart from studying ... I do *some* on-line shopping – not so much now because I got low on funds – but I belong to a couple of … like the Times Crossword and the Telegraph and I do them on-line … and then it's other things, mainly like news and sport…. [Frank, S205]

Intrinsic or Extrinsic Orientation to Study

In this study, John's existing interest in palaeontology (see first quote above) is the main reason why he is studying Earth Science modules. In contrast, certification was the primary aim of at least one participant:

> My aim is to get the qualification … I want to be told 'This is what you need to know' … Tell me and I'll learn it … [Gerald, S205].

Students take HE courses for many different reasons and with a variety of aims and personal goals. Their *orientation to learning* (Beaty, Gibbs & Morgan, 1997) influences their study patterns and their experience of learning. Learners with an *intrinsic orientation* study to pursue their interest in a particular subject or to develop the knowledge and skills necessary to perform well in their current (or future) job. They might just want to prove to themselves that they are capable of succeeding in higher education. In contrast, students with an *extrinsic orientation* are more concerned with gaining a qualification to demonstrate their achievement to others or as a means of progressing to achieve other goals or rewards. Such students tend to be more instrumental in their studies, doing only what is necessary in order to pass the course. An individual student's orientation to study is likely to influence the extent to which they are willing to engage with some course features more than others.

A summary of the *incentives* and *disincentives* related to the context and circumstances of individual students is presented in Table 2.

13

Table 2 about here

The educational context of Internet use

Factors were identified that were related to the educational context of studying with the university or with a particular course module. To a greater or lesser extent, these factors are amenable to institutional influence and control.

Technical Aspects

Pre-existing familiarity and competence with the use of ICT, whether gained from training courses (at a college or in the workplace) or from experience on other OU modules, acted as an incentive. One participant [John, S267] referred to developing expertise from taking a course on basic Internet use, another had followed the BBC *WebWise* course [Adam, K223], while a third [Carol, K223] mentioned deriving benefit from instructional sessions on making effective use of information databases given by a librarian.

However, technical difficulties often act as a disincentive to the use of specialist on-line software or password-protected facilities:

> I was given, on each of the courses, a CD-ROM [of software for on-line applications], but on the very first course I tried to use one and it actually mucked up the computer, and I wasn't the only one - it was about four of us had it happen. And I have to say that since then, even though I'm religiously given one each time, I don't use it because it so mucked up the computer … I didn't understand why, but it really put me off. So, if I really **had** to use something on there, I would chance it, but because I don't have to … [Eve, K260]

> I don't [access the Library], simply because I have great difficulty trying to get
>
> through to it … I've changed my password twice and I'm still having problems
>
> … and I can get through to the page where it comes up to get into the Library …
>
> and then it stops and it won't let me go any further. [Heather, S267]

Note that in the first of these quotes, the student explicitly refers to the *optional* nature

of the activity. If progress on the module required or necessitated her resolving the

technical difficulties, a solution would have been found. Another participant had

encountered difficulties uploading assignments to the university's on-line submission

system, but because this forms an essential element of the course, a 'work around'

solution had been arranged with the tutor [Carol, K223].

Pedagogic Design of Course

Some participants described how activities and tasks in the course module they were

studying made explicit reference to the use of external Web resources (see Table 1).

These students were positively encouraged to draw upon Internet resources and these

provided an incentive:

> The scenario was that you had a friend suffering headaches and you're told that
>
> if you eat a lot of chocolate, it could trigger headaches. The task was to …
>
> identify 10 or 20 websites and then choose the 10 that were most relevant and
>
> then cut that down to 3 and say why you cut it down to those 3 … The activity
>
> task was getting you to use the Internet to look at different health and research
>
> and science sites … these 3 different angles would provide different viewpoints
>
> on the problem … [Adam, K223].

In contrast, other course modules had been designed to be self-contained and did not

require or encourage students to make use of external resources. Internet links were

provided, but use of the resources was not an integral part of study materials or activities. This acted as a disincentive, because they were perceived as being completely optional:

> I don't find any actual encouragement … you don't find something … in the course text that says 'At this point you probably need to go onto such-and-such site … to check something on that site' … they don't do that. It's left up to you whether to access the site or not. [John, S267]

Some participants had chosen not to follow such links, while one participant had tried some of the recommended websites, but had found them unsatisfactory for his needs:

> On the S205 website there's a 'Links Library' which I was actually trying to use last night … I don't know; I'm not really happy with the links they've got … because they don't seem to lead to the actual, kind of, information I'm looking for. So I usually just use my own stuff. [Frank, S205]

However, some participants described instances of Web searching prompted by a need to acquire information to supplement or clarify the materials provided in their course materials. This incentive could be considered to be negative in relation to pedagogic design, because it arises from perceived *deficiencies* rather than from deliberate intentions in the teaching materials.

> Yesterday there was something on crystalline refraction … that I was looking up … and, basically, I couldn't quite get what I wanted out of the [module] books, so basically, I went to Google and I got the information I needed from Google … [Heather, S267]

… so sometimes you'd go to answer a question and you'd think 'I could do with more information' so then you could go on-line. [Eve, K260]

For at least one participant there was a preference for using the Web to help overcome difficulties rather than to follow up links to resources recommended within the module:

Sometimes, if I'm finding an idea hard to get my head around, I just stick it in a search engine and see what I get … to see if there's something that comes from a different angle. But I haven't used any references that the OU would have given me. [Gerald, S205]

Course Assessment

Almost all participants stated that assessment guided their study behaviour. Topics or aspects of a module that they knew were going to be assessed were much more likely than others to receive their study time and attention. When the time available for studying is limited, it is necessary for students to be selective:

Well I really look and see what have to do for my [assignment] and then I know how much I have to try and look up … and get the studying done. [Barbara, K223]

I look at what's required for the essays and then I've just read in depth what I needed for the essay … and then, hopefully, reading that will get me through the exam. [Diane, K260]

If I'm going through a book and I know I'm tight for time, I read the [assignment] question … the [assignment] questions direct my studies. [Gerald, S205]

When online resources need to be used for assignments, students will access them:

> No I don't read all the off-prints and things like that … I usually use the ones
> that I feel are going to be relevant … I try to do all of the activities … on the
> course, but I tend to predict the things that are going to be useful for the actual
> assignment I'm doing. [Carol, K223]

If assignments do not require online resources to be used, they tend to be ignored even if recommendations and/or links are specified. This is particularly evident when students know that they are going to be assessed only on the materials provided for their course module:

> I don't actually find the need to use the Internet for OU studies – all the
> materials are supplied …
>
> *Interviewer: Have you used the 'Chemistry Links Library'?*
>
> I haven't used that at all – It's for further reading and stuff like that … No I
> don't do that at all. [Gerald, S205]

A summary of the *incentives* and *disincentives* related to the educational context of individual students is presented in Table 3.

Table 3 about here

Factors in combination

Each participant's use of the Internet reflected their own particular circumstances and was often subject to a number of different influences. The combination and apparent interaction of different factors provided insights into the actual experiences of these

learners. Case studies of four participants are presented here to illustrate the interplay of various factors upon each student's use of the Internet to access information sources related to their studies.

For some participants the *Incentives* outweighed the *Disincentives*:

Example 1, Carol (K223), has a busy life at home and work [Disincentive = *Personal Circumstances - Domestic*] and had experienced technical problems with an Open University system [Disincentive = *Technical Aspects*], but she made use of the Internet for domestic purposes and in her occupational context [Incentive = *Personal Circumstances – Employment*]. Carol was drawing upon Web resources for her studies guided by the course pedagogy [Incentive = *Pedagogic Design of* Course] and assessment requirements [Incentive = *Course Assessment*].

Example 2, John (S267), had been retired early due to ill health [Incentive = *Personal Circumstances - Domestic*]. He had previously taken a course on basic Internet use [Incentive = *Technical Aspects*] and now utilised the Internet for a variety of purposes. Despite the fact that the course modules only referred to optional Web resources [Disincentive = *Pedagogic Design of* Course] that were not linked to assignments [Disincentive = *Course Assessment*], John frequently followed up links or searched the Web using Google™, because he was studying modules that were closely related to his hobbies/interests [Incentive = *Intrinsic Orientation*].

For others, the *Disincentives* they described outweighed any *Incentives*:

Example 3, Gerald (S205), worked full-time [Disincentives = *Personal Circumstances* – Employment] and was studying to gain a qualification, choosing course modules that were work-related [Disincentive = *Extrinsic Orientation*]. He searched for information on the Web for clarification and to overcome deficiencies in the course materials rather than going to links suggested in the module [Incentive (negative) = *Pedagogic Design of* Course]. Although the module recommended appropriate Web resources, these were not integrated with assignments [Disincentive = *Course Assessment*].

Example 4, Eve (K260), did not use the Internet very much (infrequent e-mailing and on-line shopping) and at the time of the interview was not in employment [Incentive = *Personal Circumstances – Employment*]. She had experienced problems with OU software [Disincentive = *Technical Aspects*]. The course modules she studied did not encourage her to access online resources [Disincentive = *Pedagogic Design of* Course], while assignments could be completed without reference to any online resources [Disincentive = *Course Assessment*]. She had only searched the Web occasionally in response to perceived deficiencies in the module materials [Incentive (negative) = *Pedagogic Design of* Course].

Discussion of Findings

Although the learners in this study were taking part-time distance education courses, most of the findings are highly relevant to campus-based students who are increasingly expected to use the Internet in their studies. Further, while the small sample of participants for this qualitative study cannot be considered to represent *all* undergraduate learners (nor even all adult independent learners), the findings do have

20

considerable relevance to learners in a wide range of situations and contexts. There are likely to be additional factors that are relevant to students in other social and learning environments.

The wider contextual factors are of growing significance for students at campus-based universities, for whom studying has to co-exist with other demands upon their time and attention. Changes in student finance arrangements in the UK and elsewhere have resulted in very many 'full-time' students taking paid employment both during vacations and throughout term times to support their years in HE.

The students in this study are not averse to using the Web to find information that they feel will be of benefit to them. It is clear that what independent learners give their time and attention to while studying is determined by a range of contextual factors, both academic and non-academic. Participants' circumstances varied, so each was subject to a different combination of factors (incentives and disincentives) that shaped their Internet use. The relative impact of factors in combination was shown in the four illustrative examples above. Although no single factor was predominant, the influence of assessment was strong in many instances, for example in the different responses to technical difficulties encountered by Carol and Eve and the selective attention to course elements reported by most participants.

The role of assessment

Almost all participants in this study reported the impact of assessment in determining which aspects of the course modules got studied. Those with jobs and/or family commitments made strategic use of assignments to manage their study time, selecting which aspects of the course received their attention. Others described the need to

acquire information to supplement their module materials, for the purpose of meeting assessment requirements.

Components of a course that are perceived to be pedagogically integrated and contribute to the achievement of core course and/or personal outcomes (i.e. are *constructively aligned* - Biggs, 1999) will get more attention than those that appear to be peripheral or optional. That included deciding which Web resources, if any, got accessed and used. Independent learners are not alone in responding to assessment demands when deciding what to concentrate upon; one study of campus-based students reported that:

> "Again and again learners emphasised the role of the marking scheme in their decision to use ICT resources. Without adequate reward structures, students were unlikely to access online resources or tasks, despite recognising that that they would assist their preparation for the final exam at the end of the semester" (Concannon, Flynn & Campbell, 2005, p.509).

Information literacy skills

When the students in this study accessed the Web to find resources, they often lacked good *information literacy* skills. They were more likely to use a familiar search engine, with all the shortcomings entailed, than to adopt an approach to the task that was more *effective* (i.e. resulted in appropriate and good quality information) and *efficient* (i.e. avoided expending unnecessary time and effort in locating and evaluating appropriate resources). There was some evidence that participants who reported more efficient and effective search strategies had all received guidance and support for their Web searching in the module being studied or from elsewhere. However, further research is necessary to illuminate the relationship between the

22

strategies used to search for and evaluate information sources and the manner in which those strategies have been developed.

In HE, *information literacy* is often perceived as being the responsibility of library specialists and not the direct concern of academic teachers. Yet complex information handling tasks require learners to have not just operational skills, to effectively locate and retrieve information, but also cognitive skills to evaluate and select those elements that are relevant and useful for their needs. Those cognitive skills cannot be wholly generic; learners need to know sufficient about a particular subject in order to make evaluative judgments about what is, and what is not, relevant and appropriate (Calverley & Shepard, 2003).

Adequate scaffolding for the use of Web resources should be provided *within* academic courses (Walton and Archer, 2004), where 'scaffolding' describes the interactional support and guidance provided by teachers to facilitate a learner's development and which enables them to perform at increasingly challenging levels. In the current study, the 'chocolate and headaches' task described by Adam (K223) above provides an example of a *scaffolded* activity designed to enable learners to develop and refine their Web searching skills as well as their knowledge of the subject.

In Conclusion

This interview study aimed to investigate *why* and *how* adult independent learners use Web resources while undertaking their normal undergraduate coursework. The findings suggest that it is not technologies *per se,* but a wide range of contextual factors (personal as well as educational) that are important in determining whether

and how students use Web resources in their learning. Most adult independent learners will use the Internet for personal, domestic, social and employment purposes as well as for educational goals. They are likely to seek information resources on the Web that will be helpful for their studies, particularly their assignments, even if their teachers do not recommend this explicitly. Conversely, they are likely to avoid looking at resources that are recommended in coursework but are not obviously related to assessment. Information-handling skills that have been developed informally are unlikely to be effective for many academic purposes.

In relation to the contextual factors over which educational institutions can have some influence, the findings support existing research evidence that it is the pedagogic approach and assessment strategy that must provide the impetus for worthwhile learning activities involving the use of Web resources (Kirkwood, 2006). There are implications for those designing courses involving the use of ICT. Web resources can enrich the educational assets available to students and can contribute to their development as self-directed learners, but only when they form an integral and valued part of course pedagogy and the necessary information literacy skills have been explicitly introduced and/or supported.

References

American Library Association (1989) *Presidential Committee on Information Literacy: Final Report* (Chicago, American Library Association). Available on-line at: http://www.ala.org/ala/acrl/acrlpubs/whitepapers/presidential.htm (accessed 31st August 2007)

Beaty, L., Gibbs, G., & Morgan, A. (1997) Learning orientations and study contracts. In *The Experience of Learning* (Marton, F., Hounsell, D. J. & Entwistle, N. J. eds.) (2nd Edition) pp. 72-88. Scottish Academic Press, Edinburgh.

Biggs, J. (1999) *Teaching for quality learning at university.* SRHE and Open University Press, Buckingham.

Calverley, G. & Shephard, K. (2003) Assisting the uptake of on-line resources: why good learning resources are not enough. *Computers and Education*, **41**, 205-224.

Concannon, F., Flynn, A. & Campbell, M. (2005) What campus-based students think about the quality and benefits of e-learning. *British Journal of Educational Technology,* **36**, 501-512.

Cummings, J. N. & Kraut, R. (2002) Domesticating computers and the internet, *The Information Society*. **18**, 221-231.

Department for Education and Skills (2005) *Harnessing Technology: Transforming Learning and Children's Services*. Department for Education and Skills, London. Available on-line at: http://www.dfes.gov.uk/publications/e-strategy (accessed 31st August 2007)

Dutton, W. H., di Gennaro, C. & Hargrave, A. M. (2005) Oxford Internet Survey Report 2005: The Internet in Britain. Oxford Internet Institute, University of Oxford. Available on-line from: http://www.oii.ox.ac.uk/microsites/oxis/publications.cfm (accessed 31st August 2007).

Foster, S. (2000) Australian undergraduate internet usage: self-taught, self-directed, and self-limiting?. *Education and Information Technology*, **5**,165-175.

Frand, J. L. (2000) The information age mindset, *Educause Review*, September/October, 14-24. Available on-line at: http://www.educause.edu/er/erm00/articles005/erm0051.pdf (accessed 31st August 2007)

Glaser, B. & Strauss, A. (1967) *The discovery of grounded theory: strategies for qualitative research*. Aldine, Chicago.

Jones, S. (2002) 'The internet goes to college', A Report from the Pew Internet and American Life Project, September 15. Available on-line at: http://www.pewinternet.org/pdfs/PIP_College_Report.pdf (accessed 31st August 2007)

Joint Information Systems Committee (2006) Catalogue of e-resources. Available on-line at: http://www.jisc-collections.ac.uk/catalogue.aspx?keywords=e-Resources (accessed 31st August 2007)

Kirkwood, A. (2000) Learning at home with Information and communication technologies, *Distance Education*. **21**, 248-59.

Kirkwood, A. (2003) Understanding independent learners' use of media technologies, *Open Learning*. **18**, 155-75.

Kirkwood, A. (2006) Going outside the box: skills development, cultural change and the use of on-line resources, *Computers and Education*. **47**, 316-331.

Madden, M. (2006) 'Internet penetration and impact – April 2006', A data memo from the Pew Internet and American Life Project. Available on-line at: http://www.pewinternet.org/pdfs/PIP_Internet_Impact.pdf (accessed 31st August 2007)

McDowell, L. (2002) Electronic information resources in undergraduate education: an exploratory study of opportunities for student learning and independence, *British Journal of Educational Technology*. **33**, 255-266.

Murray, L., Hourigan, T., Jeanneau, C. & Chappell, D. (2005) Netskills and the current state of beliefs and practices in student learning: an assessment and recommendations, *British Journal of Educational Technology*. **36**, 425-438.

Naughton, J. (1999) *A Brief History of the Future*, Weidenfeld and Nicolson, London.

National Committee of Inquiry into Higher Education (1997) *Higher education in the learning society.* HMSO, London. Available on-line at: http://www.leeds.ac.uk/educol/ncihe/ (accessed 31st August 2007)

National Statistics (2007) Internet Access 2007: Households and Individuals. National Statistics, London. Available on-line at: http://www.statistics.gov.uk/pdfdir/inta0807.pdf (accessed 31st August 2007)

Peng, H., Tsai, C-C. & W1u, Y-T. (2006) University students' self-efficacy and their attitudes toward the Internet: the role of students' perceptions of the Internet, *Educational Studies*. **32**, 73-86.

Prensky, M. (2001) Digital natives, digital immigrants, *On the Horizon*. **9,** 1-6. Available on-line at: http://simschoolresources.edreform.net/download/267/Prensky%20-

%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf
(accessed 31st August 2007)

Rowley, J., Banwell, L., Childs, S., Gannon-Leary, P., Lonsdale, R., Urquhart, C. & Armstrong, C. (2002) User behaviour in relation to electronic information services within the UK higher education academic community, *Journal of Educational Media*. **27**, 107-122.

Walton, M. & Archer, A. (2004) The Web and information literacy: scaffolding the use of web resources in a project-based curriculum, *British Journal of Educational Technology*. **35**, 173-186.

Table 1: The selected course modules and their links to Internet resources

Course modules	Internet Resources	Integration
Faculty of Health & Social Care		
Knowledge, Information and Care (K223)	Course website with links to the Open University Library Links to external resources – direct Links to external resources – via ROUTES*	High – activities and assignments require students to refer to and draw upon Web resources.
Death and Dying (K260)	Course website with links to the Open University Library Links to external resources – direct Links to external resources – via ROUTES*	Low – links to external Web resources provided, but optional. Not required for use in activities or assignments.
Science Faculty		
The Molecular World (S205)	Course website with links to the Open University Library Links to external resources – direct Links to external resources – via ROUTES*	Medium – introductory activity on 'Finding and accessing information'. 'Links Library' available via website. Not required for use in assignments.
How the Earth Works: the Earth's interior (S267)	Course website with links to the Open University Library Links to external resources – direct	Very Low – links to external Web resources provided, but optional. Not required for use in activities or assignments.

*The ROUTES portal is maintained by the university Library and provides a customised database of links to quality assessed external websites relevant to a particular course module.

Table 2. Factors that relate to each individual's context and circumstances – outside the influence of the university.

	Incentives (Approach factors)	Disincentives (Avoidance factors)
Personal Circumstances - Domestic	Housebound - Internet as a window to the wider world. Single-person household – Internet as a means of maintaining and extending a network of interests. Remote location – overcoming isolation.	Family commitments – little time available for unnecessary activities – selection necessary.
Personal Circumstances - Employment	Unemployed or retired – time available to pursue personal interests. Occupational need to keep up-to-date.	Full-time work – little time available for unnecessary activities – selection necessary.
Extrinsic or Intrinsic Orientation	Existing *intrinsic* interest – Internet and other resources used to support interests and pastimes.	*Extrinsic* orientation – doing only what was necessary to get the qualification – selective use of materials.

Table 3. Factors that relate to the educational context – within the influence of the university

	Incentives (Approach factors)	**Disincentives (Avoidance factors)**
Technical Aspects	Pre-existing familiarity and competence – gained through course(s), employment, etc.	Problems with software and systems provided by the university. [Persevered if an important contribution to course – abandoned if only marginal]
Pedagogic Design of Course	Activities that make explicit reference to use of external Web resources. (Negative) Lack of clarity or perceived deficiencies in materials provided.	Optional specification of external Web resources.
Course Assessment	Assignments and/or project that make explicit reference to use of external Web resources.	Only the course 'package' is assessed – no need to refer to external Web resources.