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Listening to the learner voice: The ever changing landscape of technology use for language students

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Listening to the learner voice: The ever changing landscape of technology use for language students

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Abstract

What does learning in today's technology-enhanced environment mean? Is learning as an activity fundamentally changing as a result of the opportunities offered by new technologies and tools? How are the new communicative channels and increased social dimensions possible through Web 2.0 technologies impacting on the way students work and learn? And what does this mean for the role of teachers and institutions in terms of how they support students? This paper considers these questions and reports on findings from current research evaluating how students are actually using technologies and what this research tells us about the ways in which patterns of learning might be changing. It will consider the implications for individual teachers (in terms of designing and supporting learning activities for students) and institutions in terms of the impact on policy and the associated infrastructure needed to provide an appropriate environment that maximises the potential offered by new technologies.

Keywords: Student experience, evaluation, technology use, learning design, audio logs

1 Introduction

Whereas early use of the web tended to be predominantly about static presentation of information ('Web 1.0'), O'Reilly (2005) describes a shift towards a more interactive use of the web, characterised by social networking and user generation of content ('Web 2.0'). Many argue that the new possibilities of these social networking tools are resulting in a fundamental shift in the way we work and learn (Alexander, 2006; Downes, 2006; O'Hear, 2006). Rich immersive virtual environments such as 'Second Life' are exciting educators in terms of the possibilities they offer for learning (Calongne, ND). The rate of this change and its impact has been phenomenal and the increasing impact of technologies on all aspects of our lives shows no signs of abating.

This clearly has major implications for education and raises a whole series of questions. How are students using these new tools for learning? Are there indications that the ways in which they are working and communicating (and hence learning) are changing? What are the implications for how teachers create and maintain a supportive learning environment maximising the potential of these technologies? What are the implications at an institutional level and what is the appropriate mix of institutional versus personally appropriate technologies? This paper considers these issues by reporting on the findings from a study that aimed to elicit the student voice and evaluate the ways in which students are using technologies to support their learning. It then considers the implications of these findings in terms of how teachers design learning activities and how institutions develop appropriate policy and strategy. It highlights some of the current work in learning design through a methodology which aims to support teachers in making more effective use of technologies and concludes by arguing that there is a need for a closer synergy between research on student evaluation, learning design and institutional policy.

This paper considers the factors associated with this new dynamic, technology-rich environment, drawing on the findings from the JISC-funded[1] Learning Experience study (LXP) that explored students' use of technologies across four subject disciplines. Although the data was gathered at a time when the full impact of Web 2.0 technologies was only just emerging, the findings provide evidence of how the environment within which students are learning is rapidly changing. The paper will focus in particular on the findings found through working with the Languages and Linguistics subject centre of the UK Higher Education Academy, and will consider the implications for language learning. It will consider both the teacher and student perspectives – offering suggestions on how we need a new approach to the design and delivery of learning activities to maximise the potential affordances of the increasingly abundant range of tools and resources available to help teachers facilitate and scaffold learning, and for learners to appropriate these tools and resources for their own personalised learning needs.

The paper draws on a number of other sources of evidence to support the arguments being made. The work of Oblinger and Oblinger (2005) and the more recent ECAR survey of IT use (ECAR, 2007) in the states and Kennedy *et al*. (2006) in Australia are used as international comparisons.

2 Methodology

The LXP study focused on two main questions. How do learners engage with and experience e-learning (perceptions, use and strategies)? How does e-learning relate to and contribute to the whole learning experience? To ensure a wide range of student experiences, data was collected with the support of four HE Academy subject centres:[2] Medicine, Dentistry and Veterinary Medicine; Economics; Information and Computer Sciences; and Languages, Linguistics and Area Studies. Data collection consisted of three

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1. See http://www.jisc.ac.uk/elp_learneroutcomes.html (phase one) and http://www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_learnerexperience.aspx (phase two)
2. http://heacademy.ac.uk

main sources: an online survey, audio logs and interviews. We used purposive sampling rather than random sampling or comparison groups and selected "information-rich case studies that manifest the phenomenon" (Mayes, 2006). The combination of methods provided rich empirical descriptions of use and perceptions of technologies, whilst ensuring that there was some triangulation of data. The participating institutions provided a range of contexts across the UK – old and new institutions, city and regionally based. A total of 427 valid surveys and 85 audio logs were collected. Fourteen interviews were conducted with students who had submitted the audio logs. Full details on the methodology are provided elsewhere (Conole *et al*., 2006; Conole *et al*., 2008).

3 The learner voice: focusing on the language students

This section attempts to capture the heart of the learner voices illustrated through the in-depth case studies. The case studies drew on the data from the 85 audio log diaries left by the students and the fourteen semi-structured interviews. They were intended to illustrate "the rich diversity of the ways in which the students across the subject disciplines were using technologies, to draw out the 'learner voices' and to try and get a clearer understanding of their use of technologies holistically, over time and to support all aspects of their lives and learning" (Conole *et al*., 2006). An overwhelming feature that emerged from the case studies was the fact that technologies appeared to be integral to learning for all the students, irrespective of their background, prior IT expertise, learning preferences or subject discipline studied. Two of the case studies from the language students are represented here. Each voice is presented as a summary that attempts to capture that student's story and in particular their own unique perceptions of and experiences with technologies.

3.1 Learner one – Dzel

Dzel was a 24-year-old Turkish student, studying for a masters in applied linguistics for language teaching. She lived in a hall of residence. Her audio logs and the interview revealed that she used a range of technologies including: the Internet generally and Google in particular for searching, the institutional web catalogue for library searches, Word and Powerpoint for coursework and presentations, a memory stick for transporting information, the telephone to talk with friends. She had a laptop that she bought towards the end of her first degree. During the time data was being collected she was focusing on her thesis and final assessments, which included essays on language teaching and curriculum, language teaching and education, sociolinguistics and a presentation for her 'autonomy' unit. Her assignment focus was on the role of technology, teachers and learning objects for language learning.

  In comparison to some of the other students she uses technologies to a more limited degree. She uses Word and PowerPoint to prepare for her assignments and presentations and both Google and the library web catalogue to find information and resources. The data suggests that she is an example of a student who is still in more of a traditional mindset in terms of the use of technologies – text books feature as her primary resource and she comments that she sometimes finds it difficult to obtain relevant articles and information from the web, suggesting that she may lack the necessary information searching and evaluation skills. In terms of subject specific uses of technologies,

however, she comments that she finds online dictionaries useful as a means of checking words and finding new vocabulary. However, she does not appear to use discussion forums or MSN chat extensively, preferring to phone friends directly to talk about assignments and work activities. She describes technologies as 'supporters' or 'facilitators' for learning and as a 'rich' resource, allowing her to access content easily. She thought it would be 'impossible' to 'access' knowledge without technologies as they offered the opportunity to write, search the web, browse library files and prepare and present work. She plans to keep using technologies when she completes her studies in her professional practice as she thinks they can be motivating, despite having some concerns about plagiarism and how pupils might use technologies inappropriately.

She described how the students in her group used the discussion forum as a space to collectively decide what they were going to focus on. Although she did actively browse the discussion forum, she did not contribute significantly and complained that a minority could sometimes dominate the forum.

> We used Blackboard for all the courses actually this discussion board was specifically used for the autonomy unit but we didn't use it for the other units. I found it very interesting; we could access it in our free time and just write a comment whenever we wanted too and it was a nice discussion coz everyone just wrote a question, when you wanted and then, ahh and then the others could join. So I found it very interesting, but I think always the same people just contributed to the discussions, so I don't think there was a, I mean that not everyone contributed so not everyone joined the discussion.

She commented on cultural differences in technology use, observing that VLEs were not so prevalent in Turkey. She had also noticed that email appears to be a more common mode for communicating with tutors in the UK. She felt that more support was perhaps needed for foreign students, arguing that many will have had limited exposure to the use of technologies in a learning context before coming to the UK.

> Actually I found some differences in the materials for courses. For example back in Turkey we don't have any Blackboard site. And we didn't have any webmails specific for our school. So I mean, for example here communication was really just done by, by email, whereas in Turkey during your studies it's not that widespread communicating through email… em, for example in my own study you would just go directly to the teacher to have to ask something.

However overall she did feel that the resources (digital and non-digital) available were suitable and relevant to her studies.

> Yes, definitely, they were very suitable and I think they were very, that the resources were very rich. And I really benefited a lot from them the whole time during my studies, especially during this first year… For example, for the xxx improving my English, there were some language resources. For the university, we could access and I mean I studied all kinds of which they are like writing about, reading about, listening and specifically about our courses we also had some online material and yeah. And that was great.

She sees technologies as important for her own practice and is internalising her experience as a learner and what this means in terms of the ways she might use technologies to support her own teaching.

> I think they [technologies] are quite important and em they are really I mean a great advantage coz, I am a teacher myself. And I think they are very important like for language learning as well as for teaching for everything, they are very important.

3.2 Learner two – Peizhi

Peizhi was a 22-year-old Chinese student, studying for a masters in applied linguistics for language teaching. Like Dzel she lived in a hall of residence, but was a more active user of technologies than Dzel. Technologies mentioned included MSN, ICQ, QQ (chat software); Skype, SPSS (analysing data for her dissertation), Word, PowerPoint, and Blackboard.

For her MSN and Skype were essential. She uses them to keep in touch with family and friends and to collect data from Chinese students for her dissertation. MSN was always 'on' she said and was 'very important' for her. Other technologies she noted included SPSS for analysis of data and the basic suite of tools available from Microsoft Office.

From her experience, technologies were used far less for study purposes in China. For example, for her first English degree she used radio, television and basic lecture notes, whereas when she came to the UK she started to use a wider range of technologies, such as Skype for communication and SPSS for data manipulation.

> I think it [referring to the technology] is very important, coz in China, em, when we need teachers, we just need them, and the teachers I don't think in such a rush and you can ask them questions and even follow them to their office after class. But here everything you have to make, make an appointment, you have to send email and not all things sent by email are not things like the programme Blackboard [sentence spoken in broken English, interviewee referring Blackboard as a system they do not have in China]. Although in China, we do use these kind of systems although I don't use them quite often but here if you don't look into it, you are not using these things, ah. I think that is more important, that everything in your year arranged in order before so you can know what you are going to do but in China I don't think it is like that and here the students might report that way….. In China most of the time we don't use computers that often, when you have to do an assessment you don't have to have it typed. So although, in China we have email and QQ (chat system) we don't check that this often.

Although enthusiastic about the use of technologies, she was also aware that an environment of constant email, MSN and other forms of communication was not always conducive to studying.

> Sometimes you cannot concentrate on doing one thing, if I am at home, I mean in China, if you don't have a laptop, you write everything out by your hand. It is easier for you to concentrate, but here when you type often xxx and that you cannot help to listen to this and that.

One of the benefits of the institutional VLE (Blackboard) that she highlighted was that it meant that the materials for the course were all co-located and always available, so you could refer back to them.

> The good thing, is that, what you want is always there, so you can, I mean, that if at the beginning, I think the teacher give out, ah, some pamphlets, that I think lost them but most of them you can always download them, from the internet. It is a pity that when you take them to the Blackboard, you can just the little things, you can, you courses, you have, you know, some other courses you might have interests in you can not get access to the data.

However she also said that there were drawbacks to Blackboard, because sometimes students 'forget to look at it'. Like Dzel, she had some reservations about the discussion forums, but for her the issue was that because it was asynchronous it meant that other students and the tutors were often not logged on at the same time as you.

> ….eh, you don't know who is on the Blackboard, sometime you want someone to discuss but they are not there, they just leave a message there, and you put your opinion there several days ago, you see someone say 'not it's not that case'….but you have, you can, you might forget what you have said and what others have said and you have to look at it again. I think this is quite, disappointed. So I just go there not quite often, I see, I just want to see what other people talk.

She felt contributing to forums was important but sometimes was frustrated because she felt she was contributing just for the sake of it, rather than as part of a meaningful debate with others.

> I think I look more often than I talk, although I talk, I just think, it is not too good if you just look and not talk, so I just talk not because I want to.

She used the web extensively to find relevant information for her course but was aware of some of the limitations, highlighting in particular the issue of the variable quality of information on the web and the lack of details to be able to adequately reference material (which appears to be a particular problem with Chinese sites).

> I use search quite often, however you must be very good at using, choosing key words, or else you'll find a pack of rubbish. Sometimes, the things on the internet you are not sure whether they are right or wrong and I think the English it is alright but for the Chinese most of the time, they wouldn't give you the name of the people and they the b..bibliography or the time or date of the data or something like that. It just, its just there so when you write dissertation or something like that you cannot really use it, or it will cause a big problem, how is it, who write it each one, is that reliable or something like that.

Peizhi valued the opportunity to experience different cultures and said that her reasons for coming to study in the UK were not just to 'learn original English style' of

communicating but also to learn 'what others were doing'. This was reflected in her comments about how she liked to discuss work with other international and British students, particularly those who had different opinions to her.

> Mostly when I need help I turn to the British students and other International students, rather then Chinese more, I think. Coz when Chinese look at a sentence they, think, they might have the same opinion but one thing, people from different culture, they have different things. So I think you learn more. I would rather to discuss with other international students, as long as they have different opinions.

She also discussed how her experience in the UK had changed her perspectives on things.

> …I think the things I learnt here is very useful for me……
> …coming to England is not just coz the teaching here is good, because I can get access to other cultures, other ways of thinking, so in this way, if you know more about others, you know more about yourself
> …you realise why I am different from others…

She did struggle with some cultural differences however. For example she sometimes found it difficult to ask questions in class or to contribute to debates with the other students, as she had little prior exposure to argumentation and debate during her education in China. In particular she discussed how her first week in the UK was very hard as the teacher expected the students not only to find the answers in the book but also to present their opinions and argue their points. This approach was not familiar to her and she discussed how in China writing assignments was easier than in the UK because they were not expected to discuss ideas in the same way.

> ….I mean sometimes the Chinese wouldn't have conflict with each other, they wouldn't agree, here teacher, would like the students to argue.

To record her experiences, Peizhi kept a blog (written partly in English and partly in Chinese) of her experience in the UK. The following extracts illustrate the different uses of her blog – to record her private thoughts and perspectives; as a notebook or reference for content that she found appropriate to her studies; a record of her life in the UK.

> Yeah, I write blog nearly everyday, that is when I look into these things, and I think something is important, I write it in my blog, as a notebook ...but my blog, I mean the blog, is not too others, I mean in my course can not see it in fact, coz some of the things is important for me, I think it is new to me and sometimes you don't want to share everything with others
>   …. some of them is just to say what I learnt from the teacher today, yeah and, just the progress, what is the progress of the day, and some is like I think ah this is new ideas and ah I write it down and sometimes I say well I like this paragraph and I copy it down, and sometimes it just I don't like this class and give a comment on xxx students or something like that, mmm………………..sometimes you just write some nonsense on it.

Peizhi's experiences highlight the complexity and overlaying cultural norms and modes of communication and interaction that overseas students simultaneously engage in when studying in the UK. For Peizhi technology plays a vital, mediating role, a bridge between worlds, which allows her to keep in touch with friends and family, collect data for her thesis and reflect on her experiences of studying in a foreign country.

4 Discussion

The two learner voices described here give a flavour of the ways in which students are using technologies and how they are appropriating use to meet their own needs and preferences. Dzel and Peizhi are both foreign students struggling to adapt to learning in the UK, but the ways in which they use technologies are different, with Peizhi using a wider range of technologies than Dzel and placing a higher value on the communicative affordances of tools like MSN chat and Skype. This is echoed in the wider set of data from the survey results, the audio logs and the other interviews (Conole *et*.*al*., 2008). An illustration of this wider body of data is presented in Table 1, which provides a selection of the audio logs received from the Language students.

A parallel study undertaken by Creanor *et al*. (2006), although working with a different population of students, found similar patterns of technology use. Our findings map to an international trend toward higher levels of PC-ownership, coupled with increased ICT usage and skills (See for example ECAR, 2007; Kennedy *et al*., 2006). Many are now arguing that these students fundamentally differ from previous generations in the way they process information and communicate (and hence learn). Terms such as: 'digital natives', 'the net generation', 'the Nintendo generation', 'the neomillenial generation' (See for example Oblinger & Oblinger, 2005; Prensky, 2001; Baird & Mercedes, 2006) have been used to try and encapsulate this shift. The characteristics of this new generation include the fact that they are comfortable with technologies and adept at working in multiple/multi-modal environments. The ways that they learn are more task orientated and experiential. These learners prefer to receive information quickly, are adept at processing information and multi-tasking, and using multiple communication channels to access information and communicate with friends and tutors. They seamlessly integrate online resources and desktop applications with paper-based materials. They are critical users – not prepared to take the use of tools at face value but wanting evidence of real use and benefit. The changes also hint at a potential change in the nature of the way they learn; suggesting that they are strategic and experiential in the way they learn, more comfortable with group learning than previous generations.

We found that the students used the web extensively to extend their understanding of concepts and supplement course material. A study by Kennedy *et al*. (2006) in Australia focused on how students were using technologies to communicate, publish and share information and their findings were in line with ours, namely that there is extensive use of technology by students; they argue that this has considerable implications for institutional policy and practice. Similarly the ECAR survey (2007) indicated that Internet searching was one of students' most important strategies for learning, with 72% listing Internet searching as their preferred means of learning. In our study we also found that Google was their first action when trying to get information and Wikipedia is

Table 1 A selection of the audio logs received from the Language students

No.	Tools	Usage
17	Email	Friends from China sending articles for a presentation
		Sending out questionnaires
	MSN	To China – collaborating on project
	Internet	Searching for information
	Library system	See if books available to borrow
19	Email	Checking messages
	QQ	MSN-type system – works better for communicating with Chinese friends
	Blackboard	Looking for help with social linguistics assignment
21	Google	Searching Internet
	By2	Chinese alternative to Google
	Blog - MSN space	Copies interesting findings into own blog
	QQ	Can't use any more as email address has been stolen
22	Email	Exchanging ideas with friend Lily
	Blackboard	Picking up handout
	MSN	To discuss questionnaire
26	Blog	Make notes on project and refer to previous notes
	Word	Searching documents for keywords
	Email	To fellow student
	MSN	Talking to friend to get help with questionnaire - also another friend asks him to print something for her
	Phone	Call from friend – asked for help with questionnaire
30	Lexicon software	Tried downloading to own PC but would not run
31	Concordance programme	Could not make it work.
	MSN	Asked friend for help with above.
34	Email	Give apologies for meeting
	Phone and MSN	Getting help from friends
35	Email	Communicate with other students (assignments, etc)
	PDA	Planning and reading docs
37	Wordsmith	Finally managed to get it working (was not set up to read Chinese) Looked for keywords and frequencies. Printing problems – could not save to USB.
	Email	To tutor to explain problems
		Email from China friend with questionnaire data
	MSN	To friend and other classmate about Wordsmith problems
	Mobile	To find out about meeting time
39	Online dictionary	To check words
	Word and PowerPoint	Work on assignment
	Phone	To talk to friend about assignments
42	USB drive	Bring documents from home
	Word	Using workstation at university
		Editing questionnaire
	Concordance	
	Email	Including from supervisor
	MSN	Chat to student (in China) to get help
		Asked another student to complete questionnaire
	Phone	Recorded interview
43	Internet	Researching for presentation
	PowerPoint	Prepare presentation
	Concordance	
	Email	Emailed presentation to herself
	Memory stick	Borrowed a friend's to bring presentation to class
	Blackboard	Checked discussion and contributed
	Email	Tutor about dissertation and friend to pass on dissertation
	Phone	Shared ideas with friend
	Download PDFs	Articles from various sources, including the library

Table 1 (*cont.*) A selection of the audio logs received from the Language students

No.	Tools	Usage
	Word	
46	Search engine	Research for assignment
	Blackboard	Participating in forum (2 new messages)
	Research journals	To get information for assignment
50	Email	No messages first thing. Later helpful message from friend
	Wordsmith and concordance	For text analysis
	MSN	Follow up on email
	Webcat (Library system)	Chose books
	ScienceDirect	Look for articles
51	Email	Picked up returned questionnaires
	MSN	
	Skype	To advise student on how to complete questionnaire
52	Blackboard	Download lesson notes
	Word	Writing assignment
	Web radio	Music to help concentration
53	Email	Contact teacher who sent back some articles
		Also emailing friends
	Blackboard	Participated in forum
	Teachers TV	Got video clips of teachers in classrooms
	Blogs	Reviewing English teaching Website blogs to prepare for essay
	Search engines (including in library)	
	Word	
	Mobile	Talk to friends about study subjects
	Skype and MSN	To communicate with parents
66	Phonetics software	Demonstrated in class
69	Word	Working on dissertation
	Email and MSN	Ignored for the day
	Webcat	To check references
77	Word	Assignment
	Internet	Search for books
	Amazon	To buy books
	USB stick	To download assignment documents
	Phone	To talk to friend
82	Email	Contact lecturer about appointment
	Blackboard	Downloaded material to PC and PDA (took to lesson)
	Internet	Find information for assignment
	Library system	Reserved books and downloaded papers
	Email	Discussing assignment with tutor
	Blackboard	Contributed to forum
83	Email	
	Blackboard	Reading postings
	Voice recorder	For interviews to analyse later
	PowerPoint	For presentation
	USB stick	To take presentation to class
	Word	Every day for essays
	Dictionary.com & thesaurus	To check words
	Phone	To keep in touch with Turkish friends
	Podcasts	From English language teaching sites
84	Email	Friends and trying to find staff emails (not all on Website)
	MSN	
	Word	Spent all night on dissertation
	Webcat	
	Printing	
	Blackboard	To check dissertation details

used extensively. Most find Google easy to use. However, there is some evidence that students do not always find what they want from a search engine and that they do not necessarily have the advanced searching skills needed to perform detailed academic searches. The rapid positioning of Wikipedia as an important authoritative text, despite its relative newness, is an important indicator of the way in which students are now using technologies with peer review and sharing of 'what counts as good' being an important scaffold to help make meaning of a complex and constantly changing information landscape.

Students did however discuss how difficult it could be to assert the credibility of sources found on the web, and adopted strategies to double check sources by cross-referencing and validating material found on the web with other sources (text books, lecture notes, etc.), as well as restricting their search scope to reliable sites that they learnt to trust. Methods of validation and cross-referencing indicate that students mix and match information sources, combining old and new methods. For many the Internet was invaluable in terms of enabling them to access up-to-date information. Specialised subject-based sites were cited frequently. Printed textbooks were considered by some to be outdated and difficult to digest but were still used by many as a baseline measure.

Students described how they tended to use a process of trial and error to refine their web searching skills. The degree to which tutors steered students in terms of relevant resources varied, depending on individual departments and tutors: some provided links to recommended sites, whereas others did not. Links to useful sites were frequently passed between students.

Students recognised the value of library catalogues in terms of being able to see availability and reserve books online. The ECAR survey (2007) found similar results, with students reporting a relatively high expertise in ICT skills; although the report also cautioned that these self-reports are sometimes over inflated. In our study it was evident that some difficulties were reported in using catalogues and students were frustrated when they found that a paper they wanted was in a journal that their university did not subscribe to.

Information retrieval from the web was primarily for text-based materials but students also reported searching for images (to include in presentations), as well as downloading relevant podcasts. This was mirrored in the ECAR (2007) and Kennedy *et al*. (2006) studies. This indicates that the students were drawing on external resources to complement course materials; appropriating commercial, academic and popular information sources together so as to gain a better understanding of the topics being studied.

Use of communication technologies to support their studies was extensive. Many students reported using mobile phones frequently to phone and text each other, to discuss issues related to their learning, and particularly for assignment queries. They also used instant messaging software, especially for international communications. Email was used universally and was the main channel for tutor communication. A common pattern was for email to be used for communication between staff and students, with text messages and instant messaging used for communication with peers. Students expected and generally received quick responses to their emails and appreciated the flexibility this provided, although this does raise questions about student-tutor expectations in terms of response times. The ECAR survey found that email was still the main communication channel for official university communications.

There was surprisingly little mention of discussion forums. The language students appeared to use forums most but, as is evident in the extracts from Dzel and Peizhi, they prefer to read rather than post messages. Although they considered forums a potentially useful way of engaging with others, they complained that individuals often dominated discussions. They also found the time lag between message postings and responses frustrating and felt that it was not always possible to engage with issues at a deep level. Others expressed the view that they did not find forums particular useful or inspiring. This should be treated with caution as forum-usage is heavily context dependent in terms of how they are integrated and used within a course. However these findings are interesting in that students gave far more examples of the alternative communication channels they were using (text, chat, etc.), suggesting that students are creating their own social network to support their learning, tailored to their particular needs and using the technologies which suit them rather than being constrained in topic and technology via discussion forums. A recent survey undertaken by the SPIRE project supports this, showing a significant increase in the uptake of Web 2.0 technologies by students (SPIRE, 2007). The ECAR survey found that discussion boards were one of the least used features of VLEs; students described them as more time-consuming and less interesting than live discussions (ECAR, 2007: 72).

Low cost communication technologies such as Skype, MSN chat and email were considered invaluable forms of communication and were being used in a variety of ways (student-student, student-friends/family, student-department/university or tutor). Skype, software which allows students to call people for free or at a low cost via the internet, was specifically mentioned by foreign students as a cheap, easy way to keep in touch with friends and family. For some students text messaging and the mobile phone, although popular, were regarded as more expensive options.

Student use of blogs varied; some used blogs as a means of keeping up-to-date with new developments, others used them as a reflective diary. As described earlier, Peizhi kept a blog as a record of her experiences in the UK; other students reported reading blogs but did not discuss writing them. Ferguson *et al*. (2007) describe how Ph.D. students are now using blogging as an important part of their research practice. Kerawalla *et al*. have carried out a detailed study exploring how students are using blogs and have developed a framework which outlines the different purposes; the framework categorises use of blogs into four areas: community, audience, presentation and comments (Kerawalla *et al*., 2007; Kerawalla *et al*., submitted).

A high proportion of reported ICT-usage was in connection with assessed work. The data provided a rich picture of the ways in which students are using technologies on a daily basis to support routine aspects of their study. Students used Word to write assignments as well as take notes and PowerPoint to prepare and give presentations to their class. All were positive about the benefits of PowerPoint and Word and some wondered how they had ever managed without these tools. Kennedy *et al*'s (2006) study also uncovered evidence for how students were using technologies to support their coursework. They found that students now relied on computers to create digital documents and for general study purposes. Students cited few disadvantages to using word processing packages and found them invaluable for presenting work. A number of students mentioned the benefits of Word and PowerPoint in terms of improving the final presentation of their work; foreign students valued the grammar, spell checking and

dictionary functionality. However, there is an issue here in that well presented work is not necessarily good in terms of the content.

There was surprisingly little mention of subject-specific software. Traditional CAL-type software (such as e-tutorials and simulations) was noticeable by its absence and the few instances that did arise, for example the use of concordance software, were primarily about the difficulty of using the software.

Only one person on the survey mentioned a VLE as one of the four technologies they like to use most, and ten listed a VLE as a dislike. Critical factors appear to be whether the VLE is well designed and structured, how relevant the information on the VLE is to the students' needs and the degree to which it is really embedded into the culture of the course. The findings hint that students are beginning to move beyond VLEs as a central resource and that they use the VLE only when it meets specific, individual needs. Many students did say that they used their VLE to check for course-related information and in some cases the VLE was used as a course calendar or for communicating course administration. A fundamental issue is how students integrate use of the institutional VLE with their own personally acquired technologies. The ECAR survey found "student respondents to be immersed with technology ownership and use, and impatient with instructors who don't have adequate technical skills" (ECAR, 2007: 5).

Despite the general consensus amongst the students that online course materials 'were a good thing', face-to-face contact with tutors was still considered necessary and was cited as important by a number of students in both the interviews and audio logs. The students interviewed described the benefit of meeting with classmates and tutors to discuss work issues. Face-to-face contact was considered vital in building a sense of community or 'belongingness' to the class or study group. For many this could not be replaced by online environments. This was a key factor to emerge from the ECAR and Kennedy *et al*. studies as well, demonstrating that the students show a degree of scepticism and moderation as well as enthusiasm for the use of technologies. They see the value of face-to-face contact and personal communication and want technologies to be used appropriately, rather than extensively.

The findings demonstrate that students use a variety of communication tools to support their learning needs. Also there is evidence from the data that there is a shift in emphasis from passive to more interactive, across all aspects of their learning, which is another characteristic of today's learners. The environment students are working in is complex and multifaceted; technology is at the heart of all aspects of their lives – a key question for institutions is whether institutional infrastructures match students' own rich technology-enhanced environment, and perhaps more importantly, whether courses are designed and delivered with these external influences in mind.

Students appear to place greater value on technologies they have 'discovered' or selected for themselves. Ownership, personalisation and appropriation of technologies are overarching themes that emerge from the data. Personalisation and a sense of control come across as key factors of success in the use of technologies. Importantly, if students did not find the technology or platform provided by the institutions useful they were in a position to by-pass it in favour of their own personalised approach and preferred tools.

The findings suggest a shift in the way in which students are working with a rich and complex inter-relationship between individuals and tools. In a recent paper (Conole *et*

al., 2008) we described eight factors that emerged from the data in terms of the changing nature of the way students are working and argued that this might form a useful checklist against which institutions might begin to think about and incorporate these findings into policy and practice (Figure 1).

5 Implications

The findings have profound implications for how teachers design learning activities, as well as for institutional ICT strategy. Both design and strategy need radical rethinking in light of this new context of students immersed in a technology-enhanced environment, with increasing levels of ICT skills and expectations of inclusion of the use of technologies as tools for learning. This section offers some thoughts on how we might begin to bridge this gap between students' expectations and their actual experiences of learning, offering some suggestions for radical rethinking at the level of design and strategy.

In terms of supporting teachers and their design strategies, there has been growing interest in recent years in the development of toolkits and planners to support the design process. Examples include LAMS (www.lamsfoundation.org), DialogPlus toolkit (Fill *et al*., 2007; Conole & Fill, 2005), Pheobe (http://phoebe-project.conted.ox.ac.uk/cgi-bin/trac.cgi) and the JISC pedagogical planner (http://www.wle.org.uk/d4l/). Coupled with this there have been attempts to capture and synthesise case studies of good practice, such as the JISC case studies of good practice (http://www.elearning.ac.uk/effprac/) and innovation (http://www.elearning.ac.uk/innoprac/), the AUTC Learning Design project (http://www.learningdesigns.uow.edu.au/) and the TELL Pedagogical Patterns (Tell, 2005). At the Open University we are currently undertaking a Learning Design project which is attempting to build on this work. We have developed a formal learning design methodology and are adapting an argumentation and mind mapping tool, Compendium (http://www.compendiuminstitute.org/), as the basis for guiding teachers through the process of creating learning activities. Work to date on this is reported elsewhere (Conole *et al*., 2007; Conole, 2008[a]; Conole, 2008[b]). We argue that there are two fundamental issues associated with this: How can we gather and represent practice (and in particular innovative practice) (*capture and represent practice*) and how can we provide 'scaffolds'
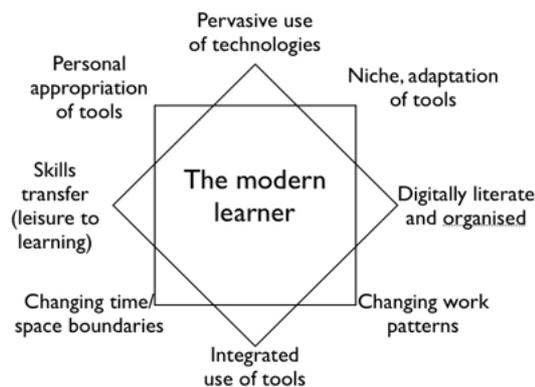

Fig. 1. The eight factors of technology use emerging from the LXP study

or support for staff in creating learning activities which draw on good practice, making effective use of tools and pedagogies (*support learning design*)?

The other key challenge is the need to put in place effective policies and strategies at an institutional level to capitalise on the potential of these new technologies. A recent review of the relationship between policy and impact on practice suggests that there is too often a gap between what is needed at a 'ground-level' and the approach adopted more strategically (Conole, 2007). Work through the HE Academy e-learning benchmarking and pathfinder programmes may offer one way forward. The benchmarking programme has provided a set of formal methodologies for institutions to undertake reflective audits in terms of what they are doing with e-learning, along with identification of strengths and weaknesses (Plenderleith *et al*., 2007). This is linked to the follow-on pathfinder programme, which intends "to be a transformation initiative which has organisational change, development and dissemination as its core aims. The goals of the programme are focused on exploiting and developing synergies to enhance and change practice where necessary" (http://elearning.heacademy.ac.uk/weblogs/pathfinder/). A series of themes are emerging across the programme in terms of approaches to successful implementation of e-learning including strategies for embedding and communicating, the nature and format of staff and student development, the role of leaner evaluation and adoption of an evidence-based approach (Carmichael *et al*., 2008).

6 Conclusion

The findings from our study and related work in the literature demonstrate that students are using technologies to support all aspects of their learning processes (communication with tutors and other students, keeping abreast of course administration, finding and managing learning materials, processing data, and creating assignments/presentations). These tools are appropriated in a variety of ways, depending on individual needs and preferences. Technology is not simply seen as an 'add on' for these students, it is central to how they organise and orientate their learning.

The implications of these findings for institutions is profound, suggesting that a radical rethink is needed in terms of how courses are designed and the type of infrastructure institutions put in place to support students. The application of a more formal learning design methodology has been put forward as a means of changing design practice and the benchmarking/pathfinder programmes are offered as illustrations of how change can be enacted at an institutional level. Finally I would argue that there now needs to be a much closer synergy between evaluation of the learner voice and their evolving use of technology, with the development of methodologies for supporting new forms of design, support for teachers in creating effective learning, and the development of appropriate policy and strategy to create technology-enhanced learning environments within our institutions.

References

Alexander, B. (2006) Web 2.0: A new wave of innovation for teaching and learning? *Educause review*, **41**(2): 32-44.

Baird, D.E and Mercedes, A. (2006) Neomilennial user experience design strategies: utilizing social networking media to support 'always on' learning styles. *Journal of educational technology systems*, **34** (1): 5-32.

Barnes, C. and Tynan, B. (2007) The adventures of Miranda in the Brave New World: Learning in a Web 2.0 millennium. *ALT-J,* **15**(3): 189-200.

Calongne, C. (ND) Blended realities: a virtual tour of education in second life. http://edumuve.com/blended/BlendedRealitiesCalongneHiles.pdf. Last accessed 10-09-07.

Carmichael, P., Papaefthimiou, M.C., Alberts, P., George, H. and Conole, G. (accepted) Developing an evidence-base for engagement and impact in Higher Education institutional e-learning projects. Poster to be presented at the *Networked Learning Conference, 2008,* Greece.

Conole, G., de Laat, M., Darby, J. and Dillon, T. (2006) An in-depth case study of students' experiences of e-learning – how is learning changing? *Final report of the JISC-funded LXP Learning Experiences Study project,* Southampton: University of Southampton. www.jisc.ac.uk/elp_learneroutcomes.html. Last accessed 10-09-07.

Conole, G., de Laat, M., Darby, J. and Dillon, T. (2008) Disruptive technologies, pedagogical innovation: What's new? Findings from an in-depth study of students' use and perception of technology. Paper accepted for *Computers and Education,* **50**: 511-524.

Conole, G. (2008 [a]) Capturing practice: the role of mediating artefacts in learning design. In: Lockyer, L., Bennett, S., Agostinho, S. and Harper, B. (eds) *Handbook of Research on Learning Design and Learning Objects: Issues, Applications and Technologies*. Hershey, Pennsylvania: Information Science Reference, part of IGI.

Conole, G. (2008 [b]) Using Compendium as a tool to support the design of learning activities. In: Okada, A., Buckingham Shum, S. and Sherborne, T. (eds) *Knowledge cartography – software tools and mapping techniques*. http://kmi.open.ac.uk/projects/kc-book/.

Conole, G. (2007) Relationship between policy and practice – the gap between rhetoric and reality. In: Andrews, R. and Haythornthwaite, C. (eds.) *The Sage Handbook of e-Learning Research*. London: Sage, 286-310.

Conole, G. and Fill, K. (2005) A learning design toolkit to create pedagogically effective learning activities. *JIME,* **8**. www-jime.open.ac.uk/2005/08/. Last accessed 10-09-07.

Conole, G., Thorpe, M., Weller, M., Wilson, P., Nixon, S. and Grace, P. (2007b) Capturing practice and scaffolding learning design. Paper presented at the *EDEN conference, June 2007*, Naples.

Creanor, L., K. Trinder, Gowan, D., and Howells, C. (2006) LEX: The learner experience of e-learning – final project report. http://www.jisc.ac.uk/uploaded_documents/LEX%20Final%20 Report_August06.pdf. Last accessed 10-09-07.

Downes, S. (2006) E-learning 2.0. eLearning magazine: education and technology in perspective. http://elearnmag.org/subpage.cfm?section=articlesandarticle=29-1. Last accessed 10-09-07.

ECAR (2007) The ECAR study of undergraduate students and Information Technology. *Educause report*, Volume 6. http://connect.educause.edu/library/abstract/TheECARStudyofUnderg/45075. Last accessed 10-09-07.

Ferguson, F., Clough, G. and Hosein, A. (2007) Postgraduate blogs, beyond the ordinary research journal. *Research Proceedings of the 14th Association for Learning Technology Conference, ALT-C 2007*, Nottingham University, 179-188.

Fill, K., Conole, G. and Bailey, C. (forthcoming) A toolkit to guide the design of effective learning activities. In: Rees, P., Mackay, L., Fill, K. and Durham, H. (eds) *E-Learning for Geographers*. Hersey, Pennsylvania: Idea Group Inc.

Kennedy, G., Krause, K., Gray, K., Judd, T., Bennett, S., Maton, K., Dalgarno, B. and Bishop, A. (2006) Questioning the net generation: A collaborative project in Australian higher education.

Proceedings of the ASCILITE conference, Sydney, December 2006. http://www.ascilite.org.au/conferences/sydney06/proceeding/pdf_papers/p160.pdf. Last accessed 10-09-07.

Kerawalla, L., Minocha, S., Conole, G., Kirkup, G., Shanks, M. and Sclater, N. (2007) Exploring students' understanding of how blogs and blogging can support distance learning in Higher Education. *Research Proceedings of the 14th Association for Learning Technology Conference, ALT-C 2007*, Nottingham University, 169-178.

Kerawalla, L., Minocha, S., Kirkup, G. and Conole, G. (submitted) An empirically grounded framework to guide blogging in Higher Education. Paper submitted to *JCAL*

Mayes, T. (2006) LEX methodology report. The JISC-funded LEX project. Glasgow: University of Strathclyde. www.jisc.ac.uk/elp_learneroutcomes.html. Last accessed 10-09-07.

Oblinger, D.G. and Oblinger, J.L. (2005) Educating the net generation. An Educause e-book publication. http://www.educause.edu/ir/library/pdf/pub7101.pdf. Last accessed 10-09-07.

O'Hear, S. (2006) e-learning 2.0 - how Web technologies are shaping education. ReadWriteWeb site. http://www.readwriteweb.com/archives/e-learning_20.php. Last accessed 10-09-07.

Prensky, M. (2001) Digital natives, digital immigrants. *On the Horizon*, 9(5). http://pre2005.flexiblelearning.net.au/projects/resources/Digital_Natives_Digital_Immigrants.pdf

SPIRE (2007) Results and analysis of the Web 2.0 services survey undertaken by the SPIRE project. Report for the JISC-funded SPIRE project. http://www.jisc.ac.uk/media/documents/programmes/digital_repositories/spiresurvey.doc. Last accessed 10-09-07.