CHAPTER 6

UNDERSTANDING STUDENTS' USES OF TECHNOLOGY FOR LEARNING: TOWARDS CREATIVE APPROPRIATION

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EDITORS' INTRODUCTION

This chapter opens Section Three, which is concerned with frameworks that can be used to make sense of the data arising from learner experience research. The authors explore how 'effective learners' use the technology at their disposal. Drawing on data from ten research projects and locating their findings with current literature, they use a developmental framework to explain how higher level skills and attributes are founded on functional access to technology. They propose that the pinnacle of effective learning in the digital age is creative appropriation – where learners have developed and practised strategies for making use of technology in creative ways to meet their own personal and/or situational needs.

INTRODUCTION: DEVELOPING EFFECTIVE E-LEARNERS

This chapter attempts to describe and conceptualise learners' effective use of technology for higher learning. There is a large literature and tradition of thinking about effective learning (Kember 1996; Marton and Booth 1997; Cuthbert 2005). This has aimed to show how learners develop understanding and the influence of learners' intentions on the approaches they adopt. In recent years, this research has progressed to explore the influence of different pedagogical and cultural environments (e.g. Case and Marshall 2004; Marton *et al*. 2005). This research then focuses on the individual and their cognitive processes as demonstrated within the context of a planned educational intervention. As Haggis (2009: 377) expresses it in her review of 40 years of student learning research, 'one of the main concerns of this research has been to find out what is wrong with students who do not engage in the ways that their tutors wish them to'.

There have been few investigations of how approaches to and conceptions of learning are influenced by the online environment (Ellis *et al.* 2007; Goodyear and Ellis Chapter 7) and even fewer that recognize that e-learning is not a separate way of learning but part of the normal everyday experience for students (Ellis and Goodyear, 2009). Drawing on student learning research then, how we understand the processes by which students learn is still informed by a dominant cognitive

and pedagogic perspective. However, the recent learner studies of experiences of learning in technology rich environment, such as those brought together in this book, show that learners are engaged in all sorts of technology mediated activities outside of the context of the course (primarily social networking and searching for online resources). In a review of the role of theory in studies of learning in immersive virtual worlds, Savin-Baden (2008: 154) notes that:

> "such studies [of the learner experience] would also seem to indicate that linearity, narrow problem solving and bounded approaches to learning where knowledge is managed and patrolled by staff is likely to be inappropriate for learning at the university in the twenty-first century.

The challenge then is to bring these two fields of work into alignment. When learners develop their skills, habits, practices, and conceptions of learning, they do so in an environment that is now inherently digital. Even those learners who are making conscious choices to unplug from digital networks for some aspects of study, or who lack functional access to technology, can no longer be seen as developing in some non-digital bubble. The social world they move through, the work they do, the institution that accredits their learning, and the information they are handling, will all at some point be touched by the ubiquity of digital networks.

To what extent do models of effective learning need to reflect the experience of learning in a digital age?

It is easy to see how traditions of understanding effective learning can be moulded to be relevant in the digital age. As an example, Higgins *et al.* (2005), who were looking mainly at research in schools, concluded that effective learning has five attributes: readiness, resourcefulness, resilience, remembering and reflecting. These can all be re-interpreted when new technologies are available to support them (for example e-portfolios, time management software on PDAs, memory sticks and so on). Perhaps it is more intriguing to ask, what would a model of effective learning look like if it was designed from now, based on what today's learners tell us about how they are learning?

In our earlier research we were particularly interested to hear from learners who were considered by their tutors to be effective in technology rich courses. We defined effective e-learners as those who were choosing and using technology in positive ways to support their learning. We recognise that such learners are not representative of most learners, concurring with others who have found few, if any, examples of learners making creative, effective uses of technology (Margaryan and Littlejohn 2008). We reasoned that these learners, despite being in the minority, would be able to demonstrate practices which would be become

mainstream in the future. The LEX study (Creanor et al 2006) study purposively sampled learners who had been identified by their tutors as succeeding in technology rich courses. Interviews with these learners demonstrated that they: were active participants in multiple communities, managed their online identities, built and shared knowledge using multiple sources, used a mixture of personal and institutionally provided technologies, understood the affordances of different technologies to help them make appropriate choices to meet the demands of novel situations, and had developed learning and organizational skills to study and manage the distractions of online study.

Other researchers have talked about this digitally astute minority in other terms. Green and Hannon (2007: 46), working with school age children, referred to a group of 'digital pioneers' and expressed their interest to 'learn from [these] children who interact creatively with digital culture'. Seale, Draffan and Wald (2008: 133) talked about the 'digital agility' of some of the disabled learners they interviewed who were:

- customizing computers to suit preferences;
- swapping and changing from a range of technologies; well-informed about the strengths and weaknesses of particular technologies in relation to design; usability, accessibility and impact on learning;

- Developing a range of sophisticated and tailored strategies for using technology to support their learning;
- Using technology with confidence;
- Feeling comfortable with technology so that it holds no fears;
- Being extremely familiar with technology;
- Being aware of what help and support is available.

Whether children or adults, this group are characterised by operating beyond the bound of the course or institutional provision, and are engaged in creative activities that others (their parents, teachers, other peers) are not aware of. They demonstrate a belief in their own efficacy with technology, a willingness to take risks, and an expectation that technology will support their efforts.

It has been noted throughout this book that it is not possible to talk about 'the learner experience' but rather that studies of 'learners' experiences' show many and varied voices. Similarly, even within a subset of 'effective e-learners', they are not a homogenous group. Sometimes, like the international students and students with disabilities, they had developed personal strategies with technology to overcome barriers to access, and used the agility this gave them to good advantage in their studies (Seale and Bishop, Chapter 9; Thema 2009). Sometimes a personal preference or interest led them to adopt technologies in ways that were

ahead of their peers. We are not talking here about learners who get high grades in an online course, but learners for whom technologies have acquired a particular personal resonance, or for whom technology lends a particular learning advantage.

Many learners have extensive skills in the use of social software, in networking, and in sharing information online. Some even host their own web sites and create their own content, including podcasts. Their skills, their willingness to experiment, their use of multiple personal technologies and their lack of respect for organizational boundaries all pose a challenge. Such adept users have an expectation of being able to access their favourite technologies within their place of learning and alongside the more formal technologies they are offered. However, their effectiveness is not just about access and skills. Just as student learning research has shown the links between students' beliefs and study strategies increasingly we understand that effective e-learning involves complex strategies and sophisticated approaches, in which personal beliefs, values and motivations are also a factor.

EXPLORING THE MODEL

The model presented in this section is one way of understanding how effective e-learners can be developed. The emphasis here is on learner development. The model sets out what is known about the strategies, beliefs, behaviours and attitudes of learners and illustrates them with the words of learners themselves. It has been developed from the data arising from the JISC Learner Experiences of e-learning programme (http://mw.brookes.ac.uk/display/jiscle2). As summarized in the Introduction to this volume, this programme aimed to gather thick descriptions of learners' uses of technology and to understand their technology use in a holistic way. In all, nine research projects engaged over 200 learners in post-compulsory education in some form of extended dialogue (mostly using interviews and diaries) over periods of a few weeks to 18 months. Over a period of 4-5 years, we have verified and clarified our ideas in order to gain an understanding of the factors which learners themselves perceive to be influential in learning effectively in this technology rich age. Table 6.1 shows how the learners' experiences reported in these studies have been arranged into a developmental sequence. Figure 6.1 arranges this sequence as a pyramid, to emphasise that the attributes of effective learners are built up on a set of technology-based practices – which in turn require appropriate skills and functional access to the relevant technologies.

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Table 6.1. Examples of technology use, along with enablers and barriers, as reported by students in the JISC Learners' experiences of e-learning programme

Examples of technology use at functional access stage	**Examples of Enablers**	**Examples of barriers**
Access to networked computer with a range of software and networked services e.g. via institutional membership Access to wireless/mobile and other digital devices e.g. camera, phone Access to any specialist hardware or software required for learning	Course materials made available in electronic format (LeXDis) Resources that can be accessed anywhere via the institutional virtual learning environment (LeAD, BLUPS) Single sign-on access to a range of online services including email, VLE, online library resources (LeAD)	Restrictions on access to social networking technologies (E4L) Lack of facilities for those using audio support applications (BLUPS) Specialist software only being provided on fixed computers on site, (LeAD)
Examples of technology use at skills stage	**Examples of Enablers**	**Examples of barriers**
Using search engines to locate supplementary study materials (PB-LXP) Being adept at accessing and evaluating information in digital environments (Thema) Using specialist (domain-specific) tools (Thema) The ability to find and evaluate what's useful (Thema)	Support from family and friends to develop basic IT skills. (STROLL) Learning to touch type, course and core modules in e.g. word processing (LeAD) Guidance and training on how to access to key academic resources such as online journals, which is not confined to induction. (BLUPS) Training in the use of library services and required digital tools	Lack of 'technical literacy' e.g. anti-virus updates, backups, installing software updates (LeAD) Heavy workloads, lack of time to develop even basic skills (Thema) Staff not having the skills to use the technology appropriately (e4L) and inconsistency between staff (LeAD) Key information about e.g. IT training sent

	available when it is needed (Thema)	out at induction, an overwhelming time and lost in all this information (STROLL, Thema)
Examples of technology use at practices stage	**Examples of Enablers**	**Examples of barriers**
Downloading course materials onto a memory stick to support learning across several locations (PB-LXP) Choosing appropriate tools e.g. Facebook as a tool to share academic resources (Thema) Accessing additional course resources from other universities (BLUPS) Knowing when to "e-" and when not to "e-", blending the affordances of tools and interactions in the online and real worlds (Thema) Using strategies for resisting distractions from social tools while working (Thema)	Institutions need to provide flexibility and choice, acknowledging the many differences among learners (e4L) Materials available for downloading to PDA, facilitating short study bursts in multiple locations (PB-LXP) Recommendations from peers about technologies to use e.g. Google docs to compile a report for a group project (STROLL). Accessing materials from other academic sites (BLUPS, STROLL, Thema)	Lack of confidence to explore new tools and resources (LeAD) Patchy wireless coverage limiting choices about where to study. (Thema) Lack of tutor skills e.g. having to print things out for tutor to read (BLUPS) Time pressures limiting ability to try out new tools, particularly for learners with disabilities (LeXDis) and international students (Thema) Difficulties in establishing network in new halls of residence or home increasing isolation from home and family (LeAD, Thema)
Examples of creative appropriation of technology by learners	**Examples of Enablers**	**Examples of barriers**
Collaborating with peers on group tasks using a mix of synchronous and asynchronous technology	Being practised in making decisions about which technology to use for which purpose e.g.	Learners' expectations for innovative uses of technology are limited by a lack of prior

(STROLL) Recording lectures onto audio CD for peer who was unable to attend lectures (Lead) Downloading course materials onto memory Keeping a blog about the course to encourage discussion with friends about the course work. (Blups)	assistive technology (LeXDis) Learners who think technology is more useful in their work context are more likely to use more types and amount of technology (PB-LXP) Using multiple identities to separate work, study and home commitments (Thema)	experience and knowledge of what university can offer. They are not pushing for the use of particular technologies and have no clear vision of a technology-rich education (LeAD) Learners adopt a cautious, conservative, low risk approach to studying when the risks are high (LeAD)

Functional access

At the base of the pyramid is the requirement to be able to access technologies, resources and services. Without reliable, convenient and cost-effective access, none of the other attributes of effective e-learners can be brought into play. It is now clear that the high ownership of personal technology amongst the majority of students does not equate to access. The value of the qualitative approach of the studies was clear as learners spoke of their ownership of laptops with broken screens or that were too old to be networked. Learners still express their need to access institutional technology, particularly networks, and have high expectations for institutions to provide them with the access they need (Hardy *et al*. 2009), such as:

> I am very very highly dependent on the Internet and the networks that the university runs (STROLL project, Jefferies and Hyde 2009: 125)

Where institutional provision and/or personal access to technology makes learning more convenient for some students, it is a necessity for others. The wide ranging list in Table 6.1 shows the enablers and barriers to access mentioned by learners themselves, including access to portals, electronic resources in multiple formats, technical support for personal technology and the ability to integrate personal and institutional technology. Having *functional access* now involves ownership, mobility, access to networks of people as well as information, and time to engage, along with what we might understand by accessibility. Candy (2009) describes these issues as the 'preconditions for participation'.

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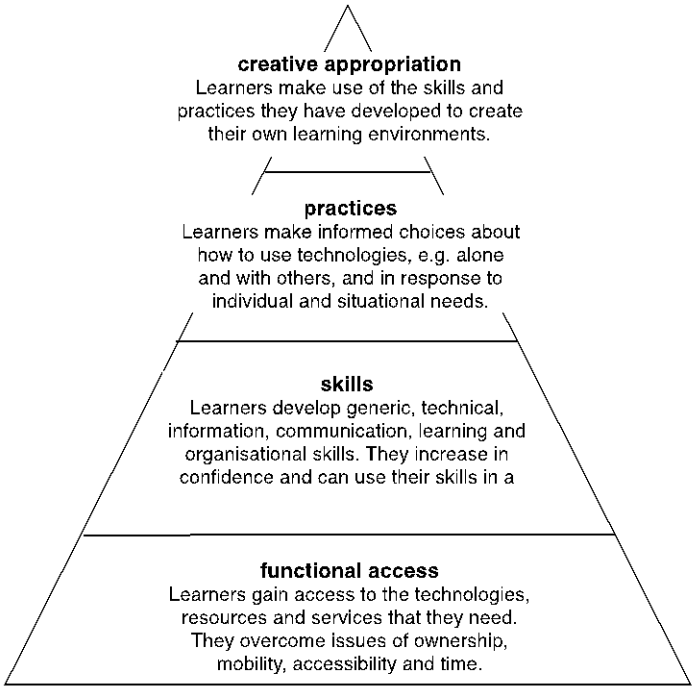
Figure 6.1 *A developmental model of effective e-learning, adapted from Beetham (2007) and Sharpe (2009)*



Skills

At this stage learners develop generic technical, information, communication and learning skills. Certainly basic IT skills are important and include learning to touch type and use a word processor e.g.

> When I started the course... If the kids were at school I couldn't turn on the computer. (e4L)

However, the learner experience studies show that the range of skills needed by effective e-learners goes beyond technical IT skills. Learners also need to use specialist tools, to work in online groups, access and evaluate digital information, and collate what they have found. Macdonald (2008) explores these skills necessary of what she terms e-writers, e-investigators and e-collaborators. These are certainly skills that effective e-learners will have mastered, but they fail to reflect how the new technologies are changing the nature of learning and knowledge. ‘e-create’ takes the idea of e-writing into other media besides text. E-collation is an essential new skill that Macdonald misses, but that forms the centrepiece of Siemens’ (2005) analysis of the ‘connectivist’ learner. Collation involves gathering of information nodes into new systems and networks, for

example through tagging, mapping, modelling, editing and commenting, syndication, use of favourites and the social software versions of the same.

We note now that much of the dependence on Google and Wikipedia appears to be coming from prior educational experiences. Learners need opportunities to apply and practise their skills in different learning contexts, for different learning activities and objectives. Further specificiation of skills needs and how to develop them is picked up by Walker, Ryan and Jameson in Chapter 15.

Practices

At this stage learners become practised at using technology to meet a particular need. They develop flexible strategies in response to situational needs and mature in these choices and uses over time. Learners make informed choices about how to use technologies, choosing from a repertoire of possible approaches. Tools, skills, social contacts and learning approaches are mixed and matched to suit immediate requirements or as part of an evolving personal 'style' of technology use.

Making choices and decisions seems to be important and is explored further in later chapters (Seale and Bishop, Chapter 9; Benfield and de Laat, Chapter 13). Good choices were illustrated particularly by disabled learners who understand

the affordances and properties of technology. Practices also evolve as learners become more aware of what they personally find helps their learning e.g.

> Podcast continues to be a great inspiration to the way I learn, I find it so helpful to listen to again and again (Jefferies, Bullen and Hyde 2009: 21)

Other choices might be taken with respect to where to study, e.g.

> I avoid libraries as much as possible and find it difficult to find the materials I need, so I rely primarily on e-journals that I can download and read in the comfort of my own home. [...] I would personally rather be home in my slippers working with my laptop from the sofa. (Thema)

At this stage, learners develop personal strategies for getting work done, which might include not using technology

> I simply unplug my Ethernet cord, keeping me from the internet altogether. Additionally, I sign out of Skype, gchat etc when I don't want those distractions

Creative appropriation

When strategies become unconscious through practice, they could be said to be fully appropriated. At this stage the learner has 'creatively appropriated' available technologies and learning opportunities to meet his/her own goals. At this stage, personal attributes and styles come to the fore, as do personal motivations for learning, and beliefs about both learning and technology. Learners will have their own reasons for how they choose to spend their time, which technologies they use in which situations, how social they are in their learning, how they manage and personalise the resources they need.

So, creative appropriation builds on the skills and practices already acquired. Here learners are taking control of their own learning, making suggestions for uses of technology that go beyond what is expected by their course or tutor, e.g.

> 'Had a phone tutorial with my supervisor referring to a support document he emailed to me – I digitally recorded the tutorial and saved it as a digital file on my laptop. This has then been playing while I make the adjustments to the document' (Clarke 2009: 12)

Creative appropriation is underpinned by learners' conceptions of learning and technology, and their exploratory behaviour. Exploration, agile adoption, is driven by need, not provided by tutors. "One of the group members was not able to make

it today so what we did we were connected by using MSN Messenger so we were discussing notes. We were feeding back to the other person." (Jefferies *et al*. 2009: 16)

USING THE MODEL

Over the lifetime of the programme we found this model useful for visualising messages from the research in developmental terms. We were aware of course that this was only one possible representation of the learners' experiences we were uncovering, and indeed we produced many others for different audiences and purposes. We believe that learners' own voices should be privileged, particularly in the contexts where their views have been collected and where they have a real stake in how those representations are used. We became increasingly aware, however, that this model might serve another need: promoting dialogue between staff whose main concern is the development of learners' academic practice, and staff whose main concern is the development of technology-supported learning. We urgently need a model that speaks to both sides of the discussion, to help us rethink what learners need if they are to develop as effective lifelong learners in the digital age.

The model as a hierarchy of needs

One way we can have this discussion is to relate our model to Maslow's (1987) 'hierarchy of learning needs'. This posits that the highest goal of learning, which Maslow termed self-actualisation, can only be strived for when more basic goals are being met. Without wanting to map our terms to Maslow's directly, we note that creative appropriation shares features with self-actualisation, being concerned with how learners negotiate a new, more capable identity as a resource for acting in the world.

Given this, the model can be used to inform curriculum interventions which aim to make learners more capable of acting with purpose and effect in technology-rich environments. We know from our research that staff tend to over-estimate learners' technical abilities and under-estimate the time required to cover basic proficiency when introducing new applications. The LliDA project (Beetham, McGill and Littlejohn 2009) found innovators introducing Web 2.0 technologies and immersive environments such as Second Life, in the expectation that learners would use them to meet fairly high level curriculum goals, only to find that they got 'stuck' on the affordances of the technology itself. The development pyramid helps us to situate our expectations of learners. Are we helping them to build functional access with technologies that may be unfamiliar, assessing their skills are a well-defined task, or demanding that they demonstrate complex practices such as collaborative knowledge building in a fairly open-ended context? The

higher up the pyramid our expectations, the more we need to ensure that learners are equipped with the capabilities they need at the foundational level. Incidentally, this approach can also help us to ensure assessment tasks and criteria are matched to our expectations.

The model as learning outcomes

The LliDA study also identified the need for a new framework of digital literacies to which learning outcomes could be mapped across the curriculum. Participants in the study expressed frustration that provision to support learners was so poorly integrated. Study skills or academic literacies were often being addressed in one part of the institution, ICT skills in another, information skills in another – all typically outside of the core curriculum – while many essential aptitudes such as critical and media literacy, employability and citizenship were simply not considered relevant to learning by staff or students. The LLiDA report maps in some detail how different literacies are typically 'owned', described, and inscribed into curriculum practices, where this is taking place. What follows is a simplification of this model.

Components of digital literacy, as identified by the LLiDA review, are:

- *Learning to learn,* 'study skills' for a digital age, for which learning outcomes are often defined in terms of: reflection, action planning, self-evaluation,

self-analysis, self-management (time etc).

- *Academic practice* (an alternative conceptualisation of general learning skills), for which learning outcomes are often defined in terms of: comprehension, reading/apprehension, organisation, analysis, synthesis, argumentation, problem-solving, research, inquiry, academic writing.
- *Information literacy*, for which learning outcomes are often defined in terms of: identification, accession, organisation, evaluation, interpretation, analysis, synthesis, application.
- *Media literacy* (also 'visual', 'graphic', 'audio', 'filmic' etc literacy), for which learning outcomes are often defined in terms of critical reading and creative production.
- *ICT/computer literacy,* which is very variously defined, and often in terms of technologies that are already fading from use, but some learning outcomes might include: keyboard skills, use of capture technologies, use of analysis tools, use of presentation tools, use of social tools, personalisation, navigation, adaptivity, agility, confidence

While these can be useful for mapping elements of the curriculum, they do not include any indication of level or assessment criteria. In line with Bloom's (1956) taxonomy of learning outcomes we suggest that the development pyramid could be used to identify the different levels students are expected to achieve in a range of literacy-related outcomes, i.e. functional access, skilful performance on

specified tasks, complex practice in open-ended contexts, and creative appropriation.

Particularly at the level of creative appropriation, it is less relevant to think about component literacies and more important to consider the motivations and authentic activities through which learners are integrating their practices. For example, the LliDA study identified three lenses through which all the other literacies were typically viewed by institutions: scholarship, employability and citizenship. For the institution these concern graduate attributes in the round, including issues such as participation, social justice and leadership, personal safety, ethical behaviours, managing identity and reputation, as well as how students are prepared for the knowledge economy and the world of work. For learners, these correspond to the most long-term and personal of learning outcomes that we usually refer to in terms of developing lifepath and identity, self-efficacy (Zimmerman, Bandura and Martinez-Pons 1992) and personal values.

The model as an account of learner differences

The most consistent finding of the Learners' Experiences of e-Learning programme has been the sheer diversity of the ways in which learners understand their learning with technology. As we have noted previously, while some learners

feel disadvantaged by a lack of basic access to technology, others are making sophisticated choices among a range of technology-mediated learning strategies. With digital media and networks becoming more ubiquitous, many other differences that learners manifest – such as their social resources, their preferred times and places of learning, their skills of writing and communication, and their choice of solo or collaborative study – are taking on digital aspects. Technology use is no longer a single dimension of learner difference but is multiply inscribed into the different choices and modes of engagement that learners display.

We can explain these differences in many ways, for example in relation to prior experience, peer group influence, access to technology, or individual traits and preferences. Green and Hannon (2007: 11) take the last approach, dividing learners into these types:

"Digital pioneers were blogging before the phrase had been coined

> *Creative producers* are building websites, posting movies, photos and music to share with friends, family and beyond
>
> *Everyday communicators* are making their lives easier through texting and MSN
>
> *Information gatherers* are Google and Wikipedia addicts, 'cutting and pasting' as a way of life.'

But we also know that learner behaviour is highly dependent on context (Nicolas, Rowlands and Huntington 2008), and that for sophisticated learners these 'types' are in fact practices that they can opt into or out of by choice. So rather than typologising learners in fixed ways, a mode of analysis that has been significantly discredited in relation to learning styles (Coffield, Moseley, Hall and Ecclestone 2004), the pyramid model allows us to assess individual learners' *current* stage of development, precisely in terms of the choices they can make. So to one learner, the use of pbwiki may be a technical skill to be mastered with help and support. To another, the use of one wiki application over another, or the decision to blog, tweet, or edit a wiki page in response to a conceptual problem, is a strategic choice to be made on grounds of audience impact, or personal style. Our focus is not then on the differences per se, but how the different technologies and strategies can become resources potentially available to all.

We must also be wary of seeing development as a one-way, one-route trip. The pyramid can be used to assess a range of different capabilities – for example the different literacies identified in the previous section – in recognition that learners do not develop all their capabilities equally or at the same rate. The fact that a cohort of learners may situate themselves in different parts of the pyramid with respect to different skills can be regarded as a problem of managing difference, or a resource for sharing kinds of expertise.

More radically, and with more learner-centred language, the model has the potential to be used by learners to diagnose their own digital literacy status and requirements. Rather than asking learners to rate their confidence in using specific digital tools, they could be asked to describe how they currently use these tools to support their learning. This leads us towards a fourth possible use of the model.

The model as an account of learners' conceptions of learning

We know that learner's behaviours and strategies are heavily influenced by their conceptions of e-learning (Ferla, Valcke and Schuyten 2009; Jungert and Rosander 2009), for example by prior experiences with the technologies they are using, by beliefs about their own competence and capability, by their motivation and engagement in the learning activity, and by their relationships with their tutor and other learners. As conceptions of e-learning inform how learners experience e-learning, so they can also be self-reinforcing. In this volume, Goodyear and Ellis discuss the impact of positive and negative conceptions of e-learning, while Benfield and de Laat note that whether a learning space is perceived as informal/private or under academic surveillance has a profound effect on learner behaviour.

Conceptions, beliefs and expectations of learning are strongly influenced by prior experience, so good experiences of access, and confidence in their own skills and strategies, can help learners to develop positive beliefs about their efficacy in learning-with-technology situations. The Lead project, for example, looked at expectations of technology use by new arrivals at Edinburgh University and found that they were conservative, in line with a conservative approach to study practice in general (Hardy and Jefferies, Chapter 8). For these learners to move beyond the practices that have served them well in school, they need to experience success in using new tools, where the focus is on high-level academic outcomes such as argumentation and research. The PB-LXP project, focusing on work-based students with very different experiences of formal education from the Edinburgh cohort, found that how learners perceived the value of ICT at work was the best predictor of the extent and diversity of their ICT use in learning. These findings offer confirmation that access to technology is necessary but not sufficient to predict the level, quality or diversity of its use by learners.

The work we report on here has only scratched the surface of this fascinating issue: we now need to understand far more deeply how learners' expectations, conceptions and beliefs relate to the quality of experience they have, and their development as effective learners. In helping learners to express their beliefs about particular technologies – that they are an aspect of their personal style and

identity at the top of the pyramid, or difficult to access at the bottom – we can see the model also having value as a research tool.

CONCLUSIONS: FROM ENTITLEMENT TO ENHANCEMENT

Educators and their institutions have a responsibility to ensure that students have functional access to technology and the skills to use it properly. Indeed, this responsibility is becoming enshrined in the policies of many national governments (DCMS/DBIS 2009). We see the two lower or foundational levels of the pyramid as addressing learner entitlement, and as such they are relevant across all sectors of education and lifelong learning. The technologies available and the specific skills they demand of users will continue to evolve at speed. Learners need the capacity to update their skills, and to choose the technologies that work for them, in the tasks and contexts that occupy them.

In higher education however, we need to think beyond the level of entitlement. Developing self-efficacy in learning means allowing individuals to take different pathways and express their personal or situational preferences for different modes of participation. Post-compulsory learning also focuses on how learners situate themselves in particular discipline or professional communities, which means specializing in certain approaches to knowledge building, certain combinations of

media, and certain technologies of scholarship or professional practice. Learners need to both inhabit and critique these modes.

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