

# **CAN HIGHER EDUCATION ENABLE ITS LEARNERS' DIGITAL AUTONOMY?**

**Richard Hall, De Montfort University**

## **INTRODUCTION**

The extent to which the read/write web, or Web 2.0, can enhance inclusion, engagement and learner agency within higher education [HE] curricula is a focus for current e-learning research (Ebner et al. 2007; Hall, 2008a). The implications of innovative, social and networked technologies for the development of learners' personal responsibility and decision-making impact both curriculum delivery and design processes, where academic staff recognise the pedagogic advantages that are available through these tools (Franklin and van Harmelen, 2007). Moreover, the blurring of the boundaries between social spaces and formal learning contexts (Joint Information Systems Committee (JISC), 2007) influences participation in on-line environments (Hall, 2006; Shea, 2006), and the extent to which learners digital autonomy can be enabled (TESEP, 2008; Centre for Excellence in Institutional E-learning Services (Ulster, 2008a).

Socio-constructivist models offer opportunities for students to develop academic literacies that enhance their informal and formal educational outputs, through the development of critical thinking and decision-making within spaces for independent learning (Trinder *et al.*, 2008). This development of individual decision-making and action is further catalysed through the development of personalised learning environments (PLEs), where formal and informal educational spaces can be fused both cognitively and as personal artefacts to enable self-expression and self-awareness (JISC CETIS, 2008; Ravensbourne, 2008). Where control over the personal means of production is enabled, learners can extend the power of situated, individual, educational outcomes.

This paper scopes the outcomes of a thematic study of the voices of both learners and tutors in one UK HE institution. These voices highlight how epistemological innovation is impacted by: the contextual control available to users; the rules that underpin access and participation; and the feedback received from associations within those contexts. By addressing these curriculum issues, it is argued that the read/write web can and should be used proactively by educators to enable learners to develop their autonomy in situated, personal spaces, and thereby enhance the production of educational outputs.

## **THE READ/WRITE WEB**

Although they are also known as Web 2.0 applications (O'Reilly, 2005), the use of the term 'read/write' emphasises an approach rather than a toolset and stresses the marriage of broadcast and interactive tools within a personalisable environment, which contains opportunities for: social networking; social bookmarking; user-generated content; virtual representation; the syndication of content including multimedia; and innovative approaches to content and application-handling, including mash-ups and aggregation. The impact of these tools has prompted practitioners to re-evaluate curriculum delivery in light of the interplay between applications and people (Anderson, 2007).

Recent studies on the student experience in HE (Conole *et al.*, 2006) highlight that a framework of technologies, including both institutional and non-institutional tools, are crucial in connecting students' informal and formal learning. As McGee and Diaz (2007) note:

applications defined as 'Web 2.0' hold the most promise [for teaching and learning] because they are strictly web based and typically free, support collaboration and interaction and are responsive to the user. These applications have great potential to be used in way that is learner-centred, affordable and accessible for teaching and learning purposes (p. 32).

However, Trinder *et al.* (2008, p. 6) raise a note of caution, especially for the role of staff as facilitators of learning within user-centred learning networks, given 'misconceptions surrounding the affordances of the tools, and fears expressed about security and invasion of personal space'.

These legitimate concerns impact the connections between new, web-based tools and the pedagogies that support independent learners. This is especially important in light of the report that some students are 'frustrated at the misuse or lack of use of [read/write web] tools within their institutions' (Conole *et al.*, 2006, p. 95), and that regardless of the course structures or tutor/facilitator preferences, some students are using social software on their own initiative to support their studies (Kurhila, 2006). Meaningful pedagogic development requires scaffolded participation and the modelling of ideas with feedback.

Pivotal in this development is the influence of the facilitating teacher (Salmon, 2002) in promoting on-line engagement and independence. This is particularly the case in addressing any negative, social aspects of the on-line learning that can take place, such as marginalisation, low self-efficacy (Bandura, 1989), an unwillingness amongst some learners to "self-publish" (Anderson, 2007), and fears around plagiarism, privacy and data protection (Franklin and van Harmelen, 2007). In working to overcome these issues tutors need to engage with pedagogies that encourage autonomy.

### **AUTONOMY, TECHNOLOGY AND HE**

Autonomy in HE is an area which is ill-defined and complex, with many personal, peer-group, technical and systemic factors impacting on the learning experience (Biggs, 2003). National projects (Ulster, 2008b) have highlighted how independent learning skills may be developed informally, and how institutions need to develop broader and deeper social networks, in order to develop academic literacies. This might also be productively linked to a partnership model of learning (Hall, 2006) where the focus is less on the production of personal and shared artefacts and more on the process and actuality of enfranchising learners. In this view students already have the awareness and reflexivity to engage with read/write web tools in a productive manner (Green and Hannon, 2006).

The read/write web is used to promote active citizenship and shared political involvement (MyBarackObama.com, 2008) and decision-making. Organisations such as Amnesty International and Oxfam regularly use social networking

software like Facebook, MySpace and Bebo to lever individual agency for their current campaigns (Amnesty International, 2008; Oxfam, 2008). The interplay between these organisations and web applications enables disparate groups of individuals to associate voluntarily with each other around themes or interests. In coming together to discuss, make decisions and act, individuals can acknowledge and respect personal differences. In turn, this frames a more democratic pedagogy and toolset, through which individuals are empowered to ask meaningful questions (Friere, 1972; Illich, 1977). Moreover, it might also emancipate the learner's role in her/his educational experience (Haggis, 2006; Sullivan, 2008).

Within HE curricula this type of engagement plays out with a focus upon autonomous learning through: independence; informed decision-making; self-direction and personal ownership of learning; confidence in taking control over the means of production; and developing domain-specific and personal mastery (Ulster, 2008a; Yorke and Longden, 2008) in formal and informal spaces. Practitioners, institutions and students need to understand how the appropriate integration of informal and formal education, alongside the development of independent, academic learning skills, can be managed within situated, self-managed learning contexts (REAP, 2008) that might be described in socio-constructivist or connectivist (Siemens, 2008) terms.

### **SOCIO-CONSTRUCTIVIST AND CONNECTIVIST LEARNING SPACES**

It has been argued that enhanced approaches to learning are underpinned by both socio-constructivist (Bandura, 1977; Driscoll, 1984; Vygotsky, 1978) and connectivist (Siemens, 2008) learning theories. Socio-constructivism highlights the importance of structured, personalised opportunities for developing mastery in new learning situations:

Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action (p. 22).

At each level personal actions and decision-making are socially constructed and may be connected to Wenger's (1998) 'communities of practice' model, and/or Garrison and Anderson's (2003) 'community of inquiry' model.

These personal, socio-constructivist elements are arguably fused through connectivism, which is portrayed as a learning theory for the digital age (Siemens, 2008). It recognises that individuals learn by making cognitive connections, and that these can be strengthened by creating networks with other individuals and repositories of knowledge. Siemens (2004) argues that the 'cycle of knowledge development (personal to network to organization) allows learners to remain current in their field through the connections they have formed'. Where individual autonomy is strong enough to empower personal learning, and where networks are strengthened to enable knowledge construction, information sharing and decision-making, then the capacity and capability of individuals to know more is developed.

Connectivism has attracted criticism as an invalid theory of learning (Kerr, 2007), which prescribes an approach for teaching that simply frames the development of learning environments and tasks. Moreover, its practical implementation raises many issues for users to consider, around: identity presentation and formation; engagement, agency and marginalisation; privacy and security; and developing technological confidence. However, where a connectivist manifesto for learning is developed, both within the context of user-generated and participative technologies and alongside socio-constructivism, it can begin to frame the development of PLEs.

### INTEGRATING SPACES FOR LEARNER AUTONOMY: PLES

The Ravensbourne Learner Integration project (2008) argues that a PLE is 'a learning environment that is assembled through learner choice'. It encompasses the personalised aggregation of tools, networks and content from a range of formal and informal places. This aggregation can exist in several places or be presented in one space, depending upon the nature of the personal tasks to be undertaken, or the specific aim to be achieved. The learning context, and both the learning that takes place and the artefacts that are produced within it, are owned and controlled by the individual student. The Ravensbourne Learner Integration project (2008) has developed an assemblage model that focuses upon the individual's transition from private to public learning in the context of social software and communities of practice.

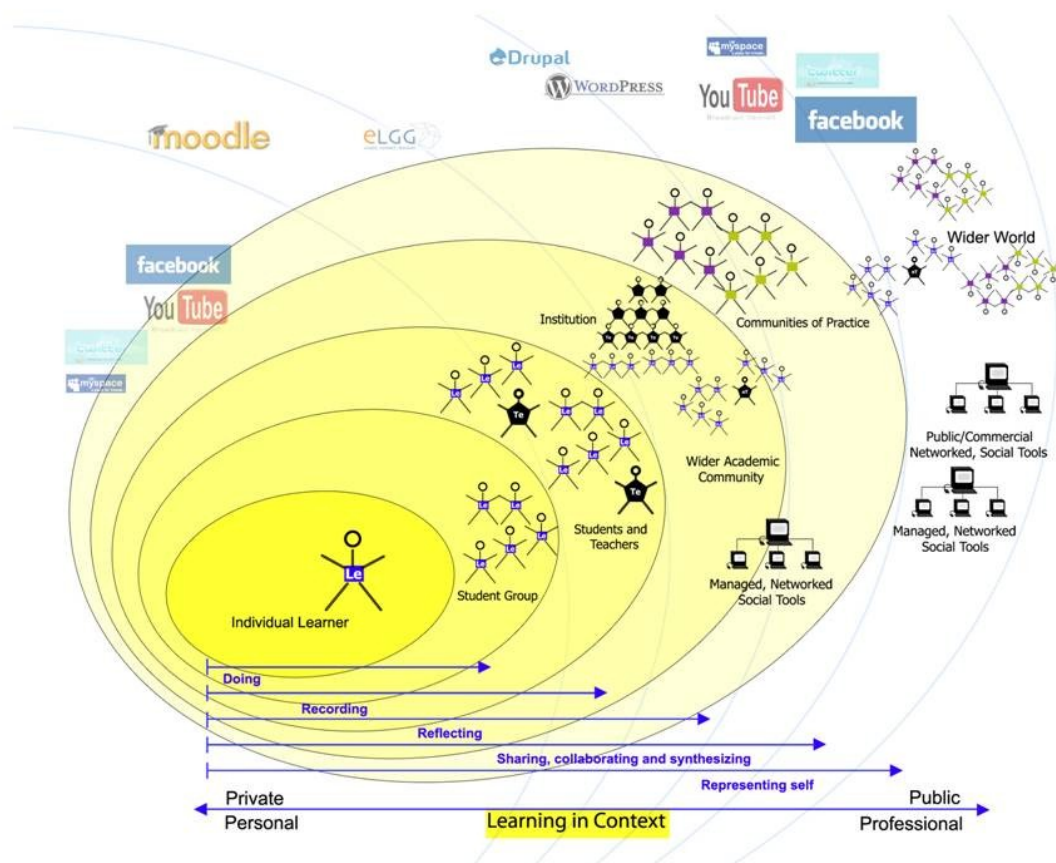


Image 1: e-Learning in Context, the Ravensbourne Learner Integration model. The Learner Integration model highlights the links between: personal mastery in specific domains; social learning in communities of practice; and social media and technologies. It demonstrates how autonomy is enhanced through active

participation with user-centred media and within groups that make sense to the individual. The key is the process of learning and how the learner becomes an independent, self-aware actor. However, by integrating and making explicit the elements that focus upon the development of the learner's personal aims, her/his feedback mechanisms or confidence in network-based, signal-processing, and the rules that operate within networks, personal ways of developing mastery can be addressed (Hall, 2008b).

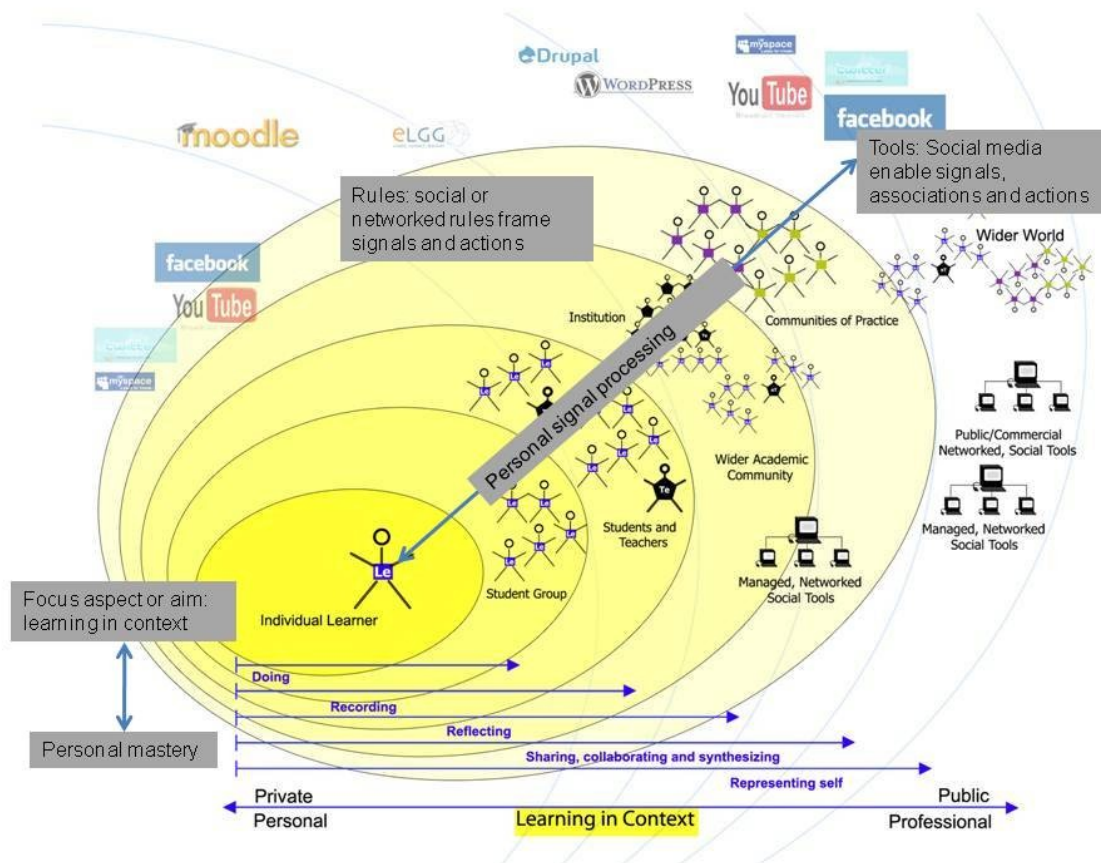


Image 2: e-Learning in Context, a Fused Learner Integration model

Individual students can develop their own approaches to conceptual mastery by modelling their learning. This is underpinned by their proximity to formal and informal associations or networks, which are personally meaningful in enabling a learning aim to be achieved. In turn the rules and frameworks that are negotiated within these networks, associations and communities frame a fused learning space for making sense of signals and feedback and making decisions.

### THE DECISION-MAKING OPPORTUNITIES OF THE READ/WRITE WEB

Dewey (1997) noted that

Genuine freedom, in short, is intellectual; it rests in the trained power of thought, in the ability to 'turn things over' to look at matters deliberately, to judge whether the amount and kind of evidence requisite for decision is at hand, and if not, to tell where and how to seek such evidence (pp. 66-7).

The ability to judge, make decisions and act upon them is a function of control over the means of production within a social setting, and gives individuals the opportunity to engage with and reshape the environments in which they operate. Authentic decision-making is embraced where power and control are devolved, so that a broadcast model of education morphs to become one which is interactive (Papert, 1993; Piaget, 1932). For Sachs (2000) such devolution must be based on trust and a sense of liberty, which together provide a means to engage with difference.

A strong civil society protects liberty because it diffuses the centres of power. It creates fraternity because it encourages people to work together as neighbours and friends. It promotes equality because it tempers self-help with help to others, and because the help given to others is such as to encourage their participation and eventually independence (p.137).

The social spaces in which we exist, and the shared values that frame them, are pivotal in promoting our social freedoms, interdependence and decision-making. It is through conversations with the users and editors of these spaces that a fuller manifestation of Anderson's (2007) core, read/write web concepts becomes apparent. Each of these concepts, namely user-generated content, the power of the crowd, data on an epic scale, an architecture that supports participation, network effects, and openness in content and computer code, affects and is affected by individual autonomy and engagement.

Anderson notes (2007, p. 53) how 'the crowd, and its power, will become more important as the Web facilitates new communities and groups', which in turn will 'challenge conventional thinking on who exactly does things', and who can access, process and mash-up 'the huge amounts of data that Web 2.0 is generating'. This process of challenging and reconceptualising is based upon the control of tools, access to and participation within a range of networks, and the facilitation of critical literacies both within and beyond the curriculum. Therefore, evaluating the spaces in which users come to terms with themselves, others, and their own means of production is critical in understanding how the read/write web impacts upon autonomy in HE.

## **EVALUATION**

### **A note on context and evaluation**

The discussion that follows pivots around the impact of the deployment of read/write technologies within one UK university. The evaluation is designed to analyse conversations about emergent curriculum approaches, in order to examine how the tools provided are being embedded. It focuses upon the triangulation of two data sources.

1. In-depth interviews and on-line focus groups with 148 students at all levels, including postgraduate, in all five University faculties between 2005-08; and
2. In-depth interviews with 11 staff before, during and after they introduced read/write technologies into their curricula.

The evaluator did not focus conversations upon the implications of the read/write web for developing autonomy. Rather, the approach engaged with understanding the systematic implementation of e-learning innovations and their impact on learning and teaching. This accords with the view of Reason (2003,

106) that the 'fundamental strategy of action research is to 'open communicative space' and help the emergence of 'communities of inquiry'.' This approach becomes rigorous through consensual participation. Thematic content analysis was used in order to unpick and capture the emergent themes from the interviews. The interviews were conducted and the coding scheme was framed and tested by the same evaluator in order to maintain an internal consistency of approach (Boyatzis, 1998).

### **Scoping autonomy and environmental control**

Connecting personal and academic technologies was critical for some students, who needed to understand the boundaries for specific learning contexts. One Post-Graduate Certificate in HE [PG Cert HE] participant noted 'Learning should simulate real-life experiences which are full of emerging gadgetry and technology.' This member of staff wanted to 'shift responsibility of learning to the learner and possibly engage students when they are switched off by other methods'. This connection between real-life tools and personal responsibility frames a theme of control as an enabler for autonomy. One level two student noted that 'staff define the use of technologies and students expect to be told what to do.' The programme tutor believed that this was because 'they don't come in with enough ideas, but I would like this to change over time, that they talk to each other, in MSN etc. and share thoughts and values.'

In part student expectations for more control within an environment are shaped by their autonomy in relation to the tasks and tools at hand, and understanding the point of a tool contextualised by a task. In light of this, one tutor focused upon a shared culture that emphasised deliberation and feedback: 'The wiki will help create a culture that is less restrictive where students can configure the space and theme pages or comments.' This type of facilitated deliberation and action enables students to find 'the right place' for tools and needs to be negotiated, especially where teams of staff deliver a unit of the curriculum. According to one level three learner 'the variance [in approach] between staff is confusing – this is the same module but different things are going on. We need a conversation about consistency of approach.' However, a level one student liked the flexibility offered where his teaching team used read/write tools that 'are easy and open software so we can create a structure that we manage [*sic.*].'

The issue of students feeling controlled by institutional tools was removed by a group of postgraduate students, who stated that 'a few of us use Skype, especially at assessment time when there was no activity on the assessment [discussion] board.' One student commenting on the use of RSS noted: 'the feed I've set up for a couple of websites is already paying off. It's great I don't have to keep visiting web sites' The independent sourcing of tools by learners to support their own learning was highlighted as a threat by a tutor on a different programme, who pinpointed the tension that existed within read/write applications where 'you have to be seen to read and to use these tools, and to give feedback.' Another tutor argued that 'many staff feel threatened and challenged by technological innovation that widens student aspirations', although a third added perceptively that 'the students have discovered and use web-based [tools] – they are migrating themselves into industry toolsets. We need to adapt.' For this tutor, environmental control and autonomy were correlated.

### **Scoping autonomy through access and participation**

One level two student felt that access to technologies that supported his out-of-class participation was important in enabling him to model his thinking

because that's when you really get to try things out and learn by trial and error. By doing this you get more of a feel for how you might use the technologies in your work. It all becomes more concrete and less abstract.

This view was echoed by a PG Cert HE participant who argued that her students valued the use of wikis for group project because this allowed them 'to work collaboratively [and] let's them quickly share links – so in a sense it is more about the efficiency of input'. A positive rationale for personal engagement in particular contexts underpins active participation. For some students the rationale was the personal efficacy of participating. A postgraduate learner highlighted that access to read/write tools 'gave me a chance to practice with others, to do it for myself... to apply the learning, test out new skills, and highlight any problems.' This places value upon a curriculum that connects personalised ways of working with adaptive tools.

These connections were viewed more positively by learners where tutors frame a space that encourages autonomy. A student on a different programme stated that 'if they [lecturers] just put their PowerPoints up I become lazy – is there any point in attending? Especially where there is no interaction.' A peer extended this to focus upon the sharing of ideas: 'there is some fear of the plagiarism [on the open web], but we just need to agree rules of engagement'. For a member of staff this participative application of read/write tools was crucial because 'these tools help them to share and ask someone else if they have problems. I want [them] to see reading as a social activity and a conversation'.

For some cohorts of students, association as a group using tools outside the control of the teaching team was critical in building a rationale for access and participation. One postgraduate argued that 'we built the community between us and now I am less apprehensive about getting feedback. It removed the fear of isolation'. This approach was empowering for a level two student who argued that 'the lecturer actually uses the technology and discusses it with us.' This tutor went on to state that these read/write tools would affect 'participation in the formation of their own project [group] identity, it will be interesting to see how this affects their overall [programme-based] sociability'.

This type of participation, within a context that respects the differences between students and fosters a space for autonomy, was echoed by a separate lecturer: 'The Web2.0 software is 'owned' and editable by them, and they can see what each other have done and all are free to comment... within a set of guidelines that promote active interest'. The level of active interest, facilitated by local environmental control and concomitant participation, spurs decision-making about threshold concepts and academic knowledge. For one learner, active participation was stimulated by user-centred social networks that have the 'advantage for more higher-level learning where actually students are self-managing and communicating with each other and learning from that interaction.'

### **Scoping autonomy in external networks**

Most interactions within a curriculum are fixed within institutionalised spaces. However, for some students external associations with validated others hold most value. In these contexts, belonging to and engaging with non-institutional friendship groups and associations validates actions. A level one student highlighted that the extension of personal skills in virtual worlds, like Second Life, was forged out of shared interests between wider groups of people. He noted that

the first thing we did was explore places that looked good and where people had already solved the problems we had. We talked to them about this about how they had solved problems. They talked to us because we were using the same language, and they could get something from us.

One of his peers went on to argue that this impacted his creativity: 'I can understand the programming but it is the creative side that has changed, because I have had to work outside our normal group.'

A distance learner using non-institutional, synchronous classrooms noted how they 'are a good community building tool with opportunities for us to learn in [diverse] teams, allowing you to gather knowledge and experience and ideas quickly and share it.' For some staff this strategy is threatening. One argued that 'It's not clear to me how del.icio.us and Flickr are learning technologies – they look like there's no quality control'. However, for a sub-set of students dialogue with non-students is critical in their own reflexive assessment of personal progress. A level two learner noted that 'my identity is defined externally and I like to go off on my own and work with others. I like [our use of read/write tools] as it is an extension of my way of working.' A second, level two learner concurred noting 'It is a process of self-validation, to have opinions outside [the University]... outside experience is important in practice.'

This sense of shared, open validation was important for one programme team: 'We encourage students to share their resources via wikis, del.icio.us, and other open applications'. This demonstrates a mastery over more than the programme's intended outcomes, but also the broader role of trust and validity in the production of personal and social assets. This link between tools and people engages a set of complex approaches towards decision-making, based upon association and dialogue. One student highlighted that this complexity was forged out of shared interests, and trustful, external contexts for action and decision-making, which 'helps build my identity and helps my work become original and authentic. It gives me inspiration.' This demonstrates the strength of external associations, based upon both common interests and a depth of conceptual understanding, underpinned by a value-set made real by control over the deployment of read/write technologies.

This point is crucial for institutions because students tend to be fleet-of-foot in the technologies that they deploy and the associations that are subsequently made. Where locally-controlled approaches take time to deploy and appear archaic, learners and tutors proactively seek out external associations and tools that enable their curricula. As a postgraduate learner stated:

I think it's quite likely that whatever the University provides people will use other tools that perhaps they did before coming to Uni[versity], such as MySpace, to manage their groups and friends. We need to look at how to make it as painless as possible to use other things alongside whatever the Uni[versity] uses.

### **CONCLUSION: DECISION-MAKING AND AUTONOMY**

Through conversations with users themes related to decision-making and autonomy emerge, which are bounded by the contextual dynamics of: who sets the agenda for the use of a particular space, in terms of the tasks and tools that shape its boundaries; who controls access to that space and whether its users feel able to participate therein; and, the external networks that users create and within which they operate. Both students and staff highlight how the marriage of read/write strategies and tools can begin to open up spaces for people to develop their autonomy. A PG Cert HE participant argued 'things have changed and I am considering how these technologies can not only enhance my teaching, but also how they can help me with my specific learning needs too'.

There is still a risk of marginalising some learners and staff, where partnership-based pedagogic models are used to promote personalised learning contexts or PLEs. This is particularly important given the political control and management of a validated curriculum by HE staff. In this way, academic and support staff need to be able to develop a meaningful pedagogical approach to the deployment of read/write web technologies, allied to problem-based tasks. As participants develop an autonomous learning strategy, the clarity of links between structured activities in various learning networks, and personal reflections on achievement became pivotal in forging an empowering PLE. Therefore, professional development for facilitating tutors within programme teams is critical in extending learner-autonomy.

The capacity of the read/write web to improve the opportunities for people to work together to shape and solve problems is pedagogically important. In validating individual stories and beliefs, and in crystallising themes around control, participation and external association, these tools give learners opportunities to ameliorate marginalisation both through dialogue and a sense that the power relationships within any space have a chance to be democratically-framed. Thus, engagement with a mix of institutional and non-institutional applications, which collectively shape the means for the production of educational outcomes, frames a context in which autonomy can be developed. Moreover, where students enter a formal pedagogic process with their actions, decisions and values already proactively informed by external engagements, there is the hope of further personal, epistemological enfranchisement in the cause of active citizenship.

### **References**

- Amnesty International (2008) *New 'unsubscribe' campaign to combat human rights abuse in 'war on terror' launched* [Internet]. Available from: [http://www.amnesty.org.uk/news\\_details.asp?NewsID=17476](http://www.amnesty.org.uk/news_details.asp?NewsID=17476) [Accessed 28 October, 2008].
- Anderson, P (2007) *What is Web2.0? Ideas, technologies and implications education*. Bristol, JISC [Internet]. Available from:

- <http://www.jisc.ac.uk/media/documents/techwatch/tsw0701.pdf> [Accessed 28 October, 2008].
- Bandura, A. (1977) *Social Learning Theory*. New York, General Learning Press.
- Bandura, A. (1989) Perceived self-efficacy in the exercise of personal agency. *The Psychologist: Bulletin of the British Psychological Society*, 2, pp. 411-424.
- Biggs, J. (2003) *Teaching for Quality Learning at University*. Buckingham, The Society for Research into Higher Education and Open University Press
- Boyatzis, R. E. (1998) *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks, CA, Sage.
- Ebner, M., Holzinger, A. & Maurer, H. (2007) Web 2.0 technology: Future interfaces for technology enhanced learning? *Lecture Notes in Computer Science*, 4556, pp. 559-68.
- Conole, G., de Laat, M., Dillon, T., & Darby, J. (2006) *LXP: Student experience of technologies*, Bristol, JISC [Internet]. Available from: [http://www.jisc.ac.uk/whatwedo/programmes/elearning\\_pedagogy/elp\\_learn\\_eroutcomes.aspx](http://www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_learn_eroutcomes.aspx) [Accessed 28 October, 2008].
- Dewey, J. (Reprint 1997) *How we think. A restatement of the relation of reflective thinking to the educative process*. New York, Dover.
- Driscoll, M.P. (1994) *Psychology of learning for instruction*. Boston, MA, Allyn and Bacon.
- Franklin, T. & van Harmelen, M. (2007) *Web 2.0 for content for learning and teaching in higher education*, Bristol, JISC [Internet]. Available from: <http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-content-learning-and-teaching.pdf> [Accessed 28 October, 2008].
- Frière, P. (1972) *Pedagogy of the Oppressed*. Harmondsworth, Penguin.
- Garrison, D. R., & Anderson, T. (2003) *E-Learning in the 21st century: A framework for research and practice*. London, Routledge/Falmer.
- Green, H. & Hannon, C. (2006) *Their space: Education for a digital generation*, London, DEMOS [Internet]. Available from: <http://www.demos.co.uk/files/Their%20space%20-%20web.pdf> [Accessed 28 October, 2008].
- Haggis, T. (2006) Pedagogies for diversity: retaining critical challenge amidst fears of 'dumbing down'. *Studies in Higher Education* 31, 5 pp.521-535.
- Hall, R. (2006) Battery-farming or free-ranging: towards citizen participation in e-learning environments. *e-Learning*, 3(4), pp. 505-18.
- Hall, R. (in press, 2008a) The impact of the read/write web on learner agency. *e-learning*, 5(3).
- Hall, R. (in press, 2008b) Towards a fusion of formal and informal learning environments: the impact of the read/write web. *Electronic Journal of eLearning*.
- Illich, I. (1971) *Deschooling society*. London, Calder and Boyars.
- JISC (2007) *In their own words: Exploring the learner's perspective on e-learning*, Bristol, UK [Internet]. Available from: <http://www.jisc.ac.uk/media/documents/programmes/elearningpedagogy/iowfinal.pdf> [Accessed 28 October, 2008].
- JISC CETIS (2008) *The CETIS Personal Learning Environments Blog*, Bristol, UK [internet]. Available from: <http://zope.cetis.ac.uk/members/ple> [Accessed 26 October 2008].
- Kerr, B. (2007) *A Challenge to Connectivism* [Internet], Paper presented at the Online Connectivism Conference, University of Manitoba, Canada. Available

- from: [http://lrc.umanitoba.ca/wiki/Kerr\\_Presentation](http://lrc.umanitoba.ca/wiki/Kerr_Presentation) [Accessed 28 October, 2008].
- Kurhila, J. (2006) 'Unauthorized' Use of Social Software to Support Formal Higher Education. In Reeves, T.C. & Yamashita, S.F. eds, *Proceedings of E-Learning 2006*. Chesapeake, VA, Association for the Advancement of Computing in Education, pp. 2602-2607.
- McGee, P., & Diaz, V. (2007) Wikis and Podcasts and Blogs! Oh, My! What Is a Faculty Member Supposed to Do? *EDUCAUSE Review* [Internet], 42(5), pp. 28-41. Available from <http://connect.educause.edu/Library/EDUCAUSE+Review/WikisandPodcastsandBlogsO/44993> [Accessed 28 October, 2008].
- MyBarackObama.com (2008) [Internet]. Available from: <http://MyBarackObama.com> [Accessed 26 October 2008].
- Napier University (2008) *TESEP project* [Internet], Edinburgh, Napier University. Available from: <http://www2.napier.ac.uk/transform> [Accessed 28 October, 2008].
- O'Reilly, T. (2005) *What is Web 2.0? Design patterns and business models for the next generation of software* [Internet]. Available from: <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-2.0.html> [Accessed 26 October 2008].
- Oxfam (2007) *Take action and end UK poverty and inequality now* [Internet]. <http://www.oxfamgb.org/ukpp/latest/index.htm#facebook> [Accessed 26 October 2008].
- Papert, S. (1993) *The children's machine: Rethinking schools in the age of the computer*. New York, Basic Books.
- Piaget, J. (1932) *The moral judgment of the child*. London, Kegan Paul, Trench, Trubner and Co.
- Ravensbourne College of Design and Communication (2008) *Ravensbourne Learner Integration Project* [Internet]. Available from: <http://confluence.rave.ac.uk/confluence/display/SCIRCLINR/Home> [Accessed 28 October, 2008].
- REAP project (2008) *Re-engineering Assessment Practices* [Internet]. Available from: <http://www.reap.ac.uk/> [Accessed 28 October, 2008].
- Reason, P. (2003) Pragmatist philosophy and action research: Readings and conversation with Richard Rorty. *Action Research*, 1, pp. 103-23.
- Sachs, J. (2000) *The politics of hope*. London, Vintage.
- Salmon, G. (2002) *E-moderating: The key to teaching and learning online*. London, Kogan Page.
- Shea, P. (2006) A study of students' sense of learning community in online environments. *Journal of Asynchronous Learning Networks*, 10(1), pp. 35-44.
- Siemens, G. (2004) *Connectivism: A Learning Theory for the Digital Age* [Internet]. Available from: <http://www.elearnspace.org/Articles/connectivism.htm> [Accessed 28 October, 2008].
- Siemens, G. (2008) *elearnspace: everything elearning* [Internet]. Available from: <http://www.elearnspace.org> [Accessed 28 October, 2008].
- Sullivan, W. M., Rosin, M. S., Shulman, L. S., & Fenstermacher, G. D. (2008) *A New Agenda for Higher Education: Shaping a Life of the Mind for Practice*. San Francisco, CA, Jossey-Bass.
- Trinder, K., Guiller, J., Margaryan, A., Littlejohn, A., & Nicol, D (2008) *Learning from digital natives: bridging formal and informal learning (Final Report)*

- [Internet], York, Higher Education Academy. Available from:  
<http://www.academy.gcal.ac.uk/ldn/LDNFinalReport.pdf> [Accessed 28 October, 2008].
- University of Ulster (2008a) *CETL: Institutional E-Learning Services* [Internet], Newtownabbey, University of Ulster. Available at:  
<http://cetl.ulster.ac.uk/elearning/>
- University of Ulster (2008b) *Student Transition and Retention Project* [Internet], Newtownabbey, University of Ulster. Available from:  
<http://www.ulster.ac.uk/star/index.htm> [Accessed 28 October, 2008].
- Vygotsky, L.S. (1978) *Mind and society: The development of higher psychological processes*. Cambridge, MA, Harvard University Press.
- Wenger, E. (1999) *Communities of Practice. Learning, meaning and identity*. Cambridge, Cambridge University Press.
- Yorke, M and Longden, B. (2008) *The first-year experience of higher education in the UK (Phase 2)* [Internet], York: HEA. Available from:  
<http://www.heacademy.ac.uk/assets/York/documents/resources/publications/FYFinalReport.pdf> [Accessed 28 October, 2008].