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REVIEW ESSAY

New technologies for education: four recent books

The e-learning handbook: social networking for higher education: resources for higher education, by R. Mason and F. Rennie, London, Routledge, 2008, 194 pp., £24.99, ISBN 978-0-415-42607-7

Improving classroom learning with ICT, by R. Sutherland, S. Robertson, and P. John, London, Routledge, 2008, 256 pp., £22.99, ISBN 978-0-415-46174-0

Leading a digital school, edited by M. Lee and M. Gaffney, Camberwell, VIC, ACER Press, 215 pp., £31.95, ISBN-10: 0-8643-1896-0

Pedagogy and learning with ICT researching the art of innovation, by B. Somekh, London, Routledge, 2007, 201 pp., £23.99, ISBN 978-0-415-40982-7

Each of the books under review offers a different perspective on new technologies for education. Somekh reviews her own research into the transformative effects of the internet over the period roughly from 1983 to 2007. Sutherland et al. summarise theoretical approaches and innovative teaching outcomes of the 2000–2004 ICT related InterActive Education project.[1] Lee and Gaffney suggest school leadership strategies for implementing digital learning 'in a world which is becoming "flatter and flatter"'. Mason and Rennie explore how 'Web 2.0 is changing the environment and the opportunities for course design' in higher education with special reference to social networking and e-learning. Although all the books fall under the general heading of what is still called 'ICT[2] in education', the scene has dramatically changed since the emergence of Web 2.0 over the last few years, and any consideration of ICT must now take full account of this. Because only Mason and Rennie take such an approach, this review will focus mainly on their book.

As signalled by Mason and Rennie's title, Web 2.0 is predominantly associated with social networking by the public as well as by educationists, who are by now accustomed to frequent media references to blogs, the blogosphere, *Facebook* and *MySpace* – all areas seen to attract young people and therefore potentially relevant to teaching and learning. More broadly, however, Web 2.0 encompasses a wide range of new affordances that rely on computing advances as well as on newer gadgets (such as mobile phones with internet access and audio-visual capabilities, iPods, webcams, palmtops) and wireless connectivity. The upshot is that the internet has become widely available to non-technical users in a variety of new forms.

Internet publishing has progressed from dependence on the technical intervention of specialists to personal activities in blogs and other hosted websites with ready-made templates. Social networking has moved on from text-based email to a proliferation of web tools that offer templates for uploading and sharing many kinds of personal information in sound, pictures and

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video. Information in all modes is retrieved in seconds either by keyword methods (e.g., Google) or through classifications (e.g., Yahoo) or a combination of both, and can be obtained regularly on demand via RSS feeds,[3] stored on memory-rich remote servers, and shared with others through various online systems including 'bookmarking' (e.g., Delicious).[4]

Crucially, all of these activities require very little initiation. Over the years, computing has become more and more user-friendly, as complex commands have given way to mouse clicks and sophisticated programming is concealed behind effortless applications. These improvements have in turn driven further advances, of which perhaps the most significant is widespread interoperability, for example, Microsoft Word allows documents to be shared globally. Moreover, computers are smaller, vastly more powerful, and cheap enough to be almost ubiquitous.

An important thing to note is that the basic functions of the internet have not changed. They are:

- Publishing, i.e., imparting knowledge.
- Knowledge management, i.e., finding, storing, editing and retrieving knowledge.
- Networking, i.e., interacting in pairs or groups, synchronously or asynchronously.

Nor have the chief educational outcomes of being online changed: access to information resources and communication in virtual spaces. These outcomes lie in the background to each of the books in the link between the new technologies and education. Given that the three principal elements in learning and teaching are content, activities and feedback, then publishing and knowledge management relate primarily to content, while networking relates primarily to communicative activity, often including the feedback needed for effective learning.

However, none of the technologies should be regarded merely as additional methods of course delivery. Indeed, the question being asked today is not so much whether and how ICT can be integrated into education, but whether we are entering an age of education 2.0, parallel to Web 2.0, as proposed in the recent report from the Institute of Education's Knowledge Lab:

> Discussion of Web 2.0 and learning needs to move beyond asking whether Web 2.0 applications 'work' in education or enhance learning. Instead, educational technologists need to consider how Web 2.0 can be shaped and designed along educational lines and how education can be re-imagined in the light of new technologies. Educators should now be striving to work with technologists to shape the learning technologies of the near future. Learners require Web 2.0 technologies that are fit for purpose alongside pedagogies and practices that are too. Only then can the undoubted educational potentials of Web 2.0 be fully realised. (Selwyn 2008, 26)

In similar vein, Mason and Rennie open their book by describing Web 2.0 as:

> … actually more than a set of tools and services. It is the powerful ideas behind the tools and services that have so much potential for education: the reality of user-generated content, the network effects of mass participation, and the openness and low threshold for easy access. These factors are inherent in the original concept of the web, just as their application to education builds on long-established principles of best practice: student engagement and interaction in learning, and student ownership and management of learning. (23–4)

Their pedagogic approach to Web 2.0 is centred on social networking[5] and they argue that Web 2.0 heralds a new leap forward.

The main point of the Mason and Rennie book is to endorse a move beyond constructivist approaches. Following Siemens (2004) they distinguish between constructivism – which supports collaborative learning and knowledge construction in a fairly predictable way – and *connectivism* which 'presents a model of learning that reflects a society in which learning is no longer a personal, individualistic activity' (19) but where learners give as much as they take and

need the intellectual flexibility to make rapid and unexpected value decisions as well as judgments about diverse opinions from other participants on the world wide web. Social networking is more than improved collaboration about given knowledge; it is largely based around the skill 'to synthesize and recognize connections and patterns' (19) and respond to them quickly. It is less about value judgments on content than about the participative processes involved in today's learning. From a connectivist viewpoint, outcomes-based teaching is an anathema, since it denies learners the crucial experience of fluid team collaboration fostered by Web 2.0.

Thus the thrust of *The e-learning handbook: Social networking for higher education* is therefore to argue for a new way of fulfilling the goals of higher education: 'long held beliefs about assessment and established educational methods must be reshaped in order to incorporate the benefits of Web 2.0' (153). They cite Armentano's (2007) description of on an online course (176): 'a beautiful collision of technology and education, people and information, ideas and communication, diversity and unification, cultures and communities, students and experts' and then argue for their own concept of:

> … a more participatory form of learning, where teachers and learners share the teaching and learning roles, where information is found in blogs and wikis controlled through RSS feeds and connected through social networks. The participatory culture is empowering and while the tools will change, the genie of participation will be reluctant to go back into the teacher centred bottle of traditional education. (177)

The theoretical underpinning of the book is thus consistent with numerous calls for the use of new technology to support autonomous, self-directed, learning in which the teacher takes the role of guide or facilitator without necessarily imposing a curriculum on learning. Personal creativity, flexibility and innovation are held to be indispensable attributes of students destined to become effective participants in the new world where the global knowledge economy predominates. Though not mentioned in the book, such an approach has raised interest in PLEs[6] (personal learning environments) alongside, or even instead of the now traditional VLEs.[7] In general, a PLE is 'a facility for an individual to access, aggregate, configure and manipulate digital artefacts of their ongoing learning experiences' (Lubensky 2006) so as to develop his/her own personalised curriculum with the aid of the world wide web.

The structure of *The e-learning handbook* is very effective. It opens with four chapters that act as overview essays introducing the key themes:

(1) Social networking as an educational tool.
(2) Design for a distributed environment.
(3) Selecting the media palette.
(4) The tools in practice.

And concludes with two more:

(5) Constraints on course design.
(6) Evaluating course design and understanding its implications.

This relates them to a range of potential course designs, the most challenging of which is 'emergent design': 'a method of designing for the unexpected, of assuming that it is impossible to anticipate how students use the tools or tackle the activities' (159). The fourth chapter, 'The tools in practice' is the pivot around which the other five revolve.

Chapter 3[8] introduces the tools and has many very perceptive sections, including a suggestive chart (Table 3.1, page 49) linking media resources to student learning needs, and making a challenging distinction between fundamental, extended, and emerging resources. It also includes somewhat less useful warnings and advice such as the problems of adding still pictures that 'take

ages' to download, or 'asking undirected questions' during a video-conference. An opportunity to discuss important methodological distinctions is lost in a chart (Figure 3.1, page 45) which simply sets out 'one-way' vs. 'interactive' text, audio, images and video, rather than noting in a principled way the different functions of each in relation to knowledge content and alongside types of activities other than discussion.

The central fourth chapter occupies roughly one third of the book and presents useful brief sketches of 19 tools[9]: blogs, wikis, podcasts, e-portfolios, social networking, social bookmarking, photosharing, *Second Life*, online forums, video messaging, e-books, instant messaging, Skype, games, mashups, mobile learning, RSS, feeds, YouTube, audiographics (61). Each section comprises:

- An opening description.
- The educational challenge.
- Strengths.
- Potential disadvantages.
- Key points for effective practice.
- Selected references. (Regrettably, the many website references with long urls make life very difficult for the reader, as there is no CD and the linked website wiki does not provide them at the time of writing this review.)
- A short case study from higher education.

The analysis of each tool is very short and sometimes omits important issues, for instance the lack of threaded comments in blogs, the difficulty of managing group audio conferences (in *Skype*) without good discussion management. Though the book is called a handbook, it does not function as a detailed primer, so the reader is very likely to need more detailed guidance on how to use these 19 tools. Nor are the tools always directly linked to the creative notions of connectivism that were heralded at the start. *Second Life* – a radical development – receives a somewhat lukewarm welcome as being 'more engaging than text-based communication' and useful for simulations (88) or 'an opportunity to… practice the true constructivist principles' (89). In fact, *Second Life* and many similar experiments have redrawn the boundaries of virtuality through avatars, even though still in a rather clumsy cartoon form.[10]

It is a pity that Mason and Rennie did not attempt to classify the tools, as it would have become apparent that while all of them do contribute to social networking, there are differences between them that predispose them for specific uses in education. This is an observation also made in Sutherland et al. (see further below). Of course, while any tool has the potential to contribute to content delivery and activities of different kinds, some are by their nature or design more useful for one or the other. Blogs were designed for, and focus primarily on publishing, as they enable content to be placed online and thus shared, with the limited option for readers to add comments. But adding comments does not support truly themed discussion. The comments are by default chronologically ordered and thus mirror the flow of normal *talk* where the chronological development and mingling of ideas is paramount. True critical discussions in an online educational context require the ability to sort messages according to various parameters such as author, subject, date, original message and direct reply, reply to a reply, and so forth, depending on changing purposes, all of which are possible with a threaded a discussion tool even as simple as email.

Thus, in educational practice, it is crucial to distinguish between what are in essence publishing tools, such as blogs, and interaction tools such as email or discussion boards, and networking tools that promote communities of interest. The host of primarily social networking applications – *Facebook*, *MySpace*, *Twitter* and *Ning*, and many others for specific age groups and sectors – in fact convey a great deal of content though it consists largely, though not exclusively, of personal

data. But, like blogs, they have not been designed for complex group discussions. Mason and Rennie recognise the importance of the user-generated content in these applications, but their preoccupation with social networking has led them to apply the term rather too widely.

It also prevents them from linking social networking tools pedagogically to the other contributions of Web 2.0. Personal publishing can now be effected not only in blogs, but also in wikis, podcasts, photosharing, youtube (with its offshoot teachertube), and hosted websites, all of which at the same time also promote contacts between individuals and groups. Knowledge management has become a shared activity through the use of applications like Digg, Reddit and StumbleUpon. Furthermore, many online tools are now multifunctional so that they can be used for content, activities, and feedback or even formal assessment. Skype, while primarily an internet telephone facility,[11] also supports simple text messages and video-conferencing. The more sophisticated systems, Elluminate *or* Adobe Acrobat Connect add turn taking with virtual hand signals, application sharing, live polling, whiteboards and PowerPoint presentations.

Nevertheless, Mason and Rennie paint a forward-looking picture of the higher education learning world. They are demonstrably right that connectivism together with the ease and freedom afforded by Web 2.0 is taking learners into a new era of self-directed learning. Both Sutherland et al. and Lee and Gaffney explore different contexts, and without the focus on Web 2.0. However, both offer useful complementary approaches to ICT for school practitioners.

Sutherland et al. is one of a long line of books that are direct successors of Mason and Kaye (1989), offering insights into how ICT may best be introduced into teaching on constructivist principles. It refers to Web 2.0 in many of its 25 case studies, briefly considering how it might foster new paradigms of 'knowledge creation'; but the focus is on how ICT in its most general sense can motivate both teachers and learners. The first chapter, for instance, describes the use of video recorded lessons to help teachers reflect on their own teaching, graphic calculators to teach liner functions to 13- to 14-year-olds, and email as a source of information for a history class with 8 year olds. Many other vignettes are reported, ranging from the VirtualFishtank lesson, to music for film, and writing a new chapter for *Alice in Wonderland*.

The book is based on a project that brought together a group of primary and secondary schools working with an FE college in small teams. The 59 teacher–researchers collaboratively developed, tried out and evaluated innovative uses of technology for their wide range of subject fields. From the accounts given, one is impressed by how much useful synergy developed among the teams. The methodology, which is described in some detail, appears to have been very successful and could be a useful model for further experiment.

Most importantly, however, this book supplies the very insight about technological tools that Mason and Rennie overlooked, as was suggested above. The authors refer to the *instrumentation* framework as central to their thinking. They argue that 'a tool is not neutral but instead has particular potentials or capabilities that can make it easier to achieve some activities and harder to do others' (59). Users [learners or teachers] appropriate tools to serve their purposes, and therefore a tool may be either successfully or unsuccessfully applied to any given task. Though no pedagogic framework as such is offered, this viewpoint is a coherent way of understanding how apparently similar tools may differ in their bias towards particular uses, and also relates to the multifunctional nature of most technologies, as noted above.

In relation to self-directed collaborative learning, Chapter 3 shows pupils using a virtual fishtank to create the kind of computer game they were familiar with, quite contrary to the teacher's instructions to design new fish and test their life expectancies. Similarly Chapter 5 shows learners appropriating the teachers' use of templates [in drop-down menus for help with writing a foreign language] to develop more flexible aids to written language.

But the book is not as easy to read as Mason and Rennie. The chapters, written by different team members, flow somewhat unevenly between practice examples and theory. One is tempted to skip through them in search of useful ideas and teachers' personal narratives are unfortunately not always scintillating reading. Dissemination of the project's findings would probably be more effective in small seminars enlivened by the personal enthusiasm of individuals.

Lee and Gaffney's *Leading schools in a digital era* is a principled and practical discussion of how school leaders can move their schools forward by successful integration of ICT into the teaching and learning. The authors present detailed outlines of goals and targets for educationists who wish to become ICT leaders. There are very many short sections, some of only a few lines, such as 'Design the right learning spaces' (87), or 'Nothing to fear but fear itself' (164). They can, however, be justified if seen as part of a very thorough checklist of issues relevant to leadership.

The book takes account of Web 2.0 chiefly in relation to the 'digital divide' as shown by survey evidence from the UK and the US that young people are increasingly independent out-of-school internet users. The authors recognise young people's successful though 'chaotic learning' to 'solve large complex problems or explore personal passions for subjects beyond the mandated curriculum of schools' (75)[12] and they call for strategies to 'integrate and align these with the policies and procedures of "high stakes" student assessment and credentialling bodies' (76). Despite a strong emphasis on the need for good teaching, for instance in their question 'What is the problem for which this technology is the solution?', the basic approach seems to be summarised in the section header 'Find a reason to use the technology' (85) and none of the direct issues about introducing technology into learning are addressed. The argument is largely around the contexts in which teaching is embedded, with a concern to make these as amenable as possible to the successful integration of ICT. The school leader is urged to consider engaging groups in discussion of some of the questions set as exercises, for instance 'ten questions to ask the IT coordinator', or of the various broad principles and strategies put forward. Readers may well agree that engagement with digital technology poses exciting new challenges for school and system leaders, and they will find here a very full and clearly structured array of issues to bear in mind, though the answers are often hardly more than signposted in section headers like 'Create a home–school nexus' or 'Look at the cultural as well as the technical factors'. That said, the book opens up a wealth of detail, with the benefit of numerous competent charts, and a full and up to date set of references.

A very different perspective is found in Somekh's *Pedagogy and learning with ICT; researching the art of innovation.* This volume draws on 25 years of research experience into the introduction of ICT into schools and universities up to 2006. It is a collection of papers, some of which arose from funded projects, and all of which are a very rich source of information including projects from many different countries. Like the other three books, it argues for innovative radical changes in teachers' approaches to learning and learners, and does so with a similar focus on collaborative and autonomous learning. The author laments that the:

> … new tools which are changing human capabilities by mediating tasks and outcomes in new ways… [have not yet led to] change of the radical kind observable in the commercial world. It is almost certainly because the structures, rules of behaviour and division of labour (roles) in schools are rooted in long-standing traditions and authority structures, that the potential of ICT to have a significant impact on learning has not so far been realised. (154–5)

Given the rapid developments of the last three years, many references to technology in this work seem a little dated; neither social networking nor Web 2.0 are mentioned even though the writer is very much concerned with computer-mediated communications. Nevertheless, the insights and arguments of this book are still very relevant. It deals with themes such as:

- The 'disembodied' online teacher.
- The gap between official policy and actual practice.
- The way knowledge is constructed with and without ICT.
- Teacher and student motivation and engagement.
- Evaluations of ICT implementation.
- The penetration of computers and the internet into the home.
- The finding that mind-maps hand-drawn by children were a stimulating way of eliciting their mental models of ICT.[13]
- The computing power that drives change.

The essence of the work is to:

> … establish that innovation depends on social processes between inter-related phenomenal levels of the national and educational cultural systems: differences in these cultural contexts shape the possibilities for transforming pedagogy and learning, making ICT powerful as a means of enabling change in some contexts and emasculating its power in others. The transformative power of ICT is illustrated in the changed life styles it has opened up for increasingly large numbers of young people in their out-of-school world. (5)

In accordance with this understanding, much of the research described in the book relies on the researchers having created effective and positive links with children, and inviting participation and advice from those already skilled in creative learning with technology at home.

As may have become clear in these short reviews, it is a source of some frustration that none of the books give more than partial insights into the relations between technology and pedagogy. There is no consistent pedagogic bridge between concepts of teaching and learning and the new opportunities at hand. Neither constructivism nor connectivism nor faith in independent learning equate to a full pedagogic rationale.

Educators who have only recently reconciled themselves to the need for a VLE are therefore likely to be baffled and dismayed. Suggestions that VLE's are too teacher-centred in design and should be replaced by Web 2.0 may well feed the suspicion that this is just another fad perhaps being taken up to mollify students. After all they have already weathered countless hortatory books, conferences, papers, funded project calls, not to mention case study after case study showing how ICT, including expensive VLEs, can and should be incorporated. Many still believe that they – the teacher – are the pivot around which learning turns, yet cannot see a framework within which they could bring some coherence to the apparently disconnected array of tools.

To conclude, these books have not resolved the well-worn simple question: *By what means can a teaching or learning need be best satisfied?* And the well-worn simple answer is still appropriate: *It all depends on subject specific requirements and the contextual constraints.* A new technology tool may or may not be relevant. The decision can only be made in terms of immediate goals, and these relate either to the target knowledge or skills (the content), or to the learning activities (discussion, laboratory or clinical practice, field trips, etc) or to feedback and assessment (from the teacher or peers or the learner herself). Using a framework around these distinctions,[14] teachers could profit from the reviewed books and move towards their own understanding of the new technologies for teaching, whether traditional or digitally mediated, and learning, whether problem-based, discovery-based, resource-based or simply mnemonic.

Notes

1. The InterActive Education project, ESRC.
2. Information and communication technologies.
3. (Rich Site Summary) Software that regularly and automatically sends users information from websites they have selected.

4. Keeping notes of useful web pages.
5. Robin Mason, who died in 2009, was active in the field of computer mediated communication for over 20 years, having published the aptly named *Mindweave: Communication, computers and distance education* with Tony Kaye (Mason and Kaye 1989) when they were both Open University lecturers. At that time the effects of social networking in organisations, public life and education had already been analysed by Hiltz and Turoff (1978). Mason and Kaye's work helped to bring the field into higher education. In fact, they contributed for several years to the Institute of Education's Online Education and Training course that Anita Pincas and Harvey Mellar initiated in 1992.
6. Personal learning environments.
7. Virtual learning environments.
8. Surely a misnomer for 'Selecting *from* the media palette'.
9. Unclassified in that order.
10. Over 200 universities or *academic institutions* are in *Second Life* and between them own over 250 plots of virtual land roughly equivalent to 16 acres (see Kelton 2007).
11. Voice over Internet (Vol).
12. Illinois Institute of Design study (2007, 26).
13. Chapter 10, 'Mapping learning potential', incisively analyses several such maps.
14. As explained in Pincas (2009).

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Anita Pincas
Institute of Education, University of London, UK
A.Pincas@ioe.ac.uk