Chapter 2

Users as learners: rethinking digital experiences as inherently educational

Linda Leung

The field of education considers its primary users to be ‘learners’ or ‘students’: can digital experience design benefit from making this conceptual leap from users to learners, shifting the focus from the purely utilitarian motives of the user to the information and interaction needs of the potential learner? Every digital experience demands some form of tacit learning on the part of its users. Therefore, basic educational principles can be implemented in the design of digital experiences both informally (such as in wayfinding) and formally (such as in e-learning). The chapter will provide an overview of key educational theories and their applicability to the general design of digital experiences.

While the notion of lifelong learning stresses the importance of facilitating learning outside of formal educational environments, there are also benefits to borrowing those institutionalised principles of teaching and learning which relate to the design of educational experiences and applying them to industrial processes of designing digital experiences. The rich traditions of education have so much to offer to multimedia practitioners, but they have yet to be mined. Best practice emerges through a dialogic process between the dot.com and education sectors, which entails understanding what industry requires of the education sector, as well as what industry can learn from educational approaches as well. This chapter examines the latter.

This dialogue can be difficult, as those connections between academic and professional practice do not always easily fit. As an educator, I see my students being challenged every day in their attempts to apply their learning processes into their design practices. The language of the industry does not necessarily translate well into the academy. But apart from those discursive differences, to be outward-looking, to go beyond one’s own disciplinary boundaries to seek affiliation is important to a new area such as multimedia which is still in the early stages of developing its own research and knowledge bases.

Kozel (1998) agrees that interactive multimedia developers can and should learn from more established industries and disciplines such as education. Furthermore, Boud and Miller (1996: 5) suggest that the traversing of disciplines or 'the crossing of boundaries' is essential in the process of learning from experience, and subsequently, in understanding how experiences can be designed to maximize learning.

Users are learners

People who consume information technology (IT) are defined largely as users rather than consumers or audiences. It is perhaps this limited vocabulary for representing users of IT which has contributed to the lack of discourse between interactive multimedia and education (which constructs its user groups as students, learners or pupils), or other media (which conceives of its users as readers, spectators, viewers, listeners or players). I argue that all digital experiences require some form of learning, even if they are not intended to be explicitly educational.

Although users of digital media products are not learners in the formal sense of the word as they are not necessarily affiliated to an educational institution, the purposes for which digital experiences are sought involve learning. Whether this is doing a Google search, looking for a map and directions on a touchscreen infomation kiosk, or making new acquaintances in a chatroom, the processes of discovery that these entail require learning however superficial or even incidental they may be. It can include learning how a digital product works (such as making a call on a new or unfamiliar mobile phone), learning how to find the information one needs (such as navigating a DVD menu to select a particular scene in a film), or learning about others (such as debating an issue in a discussion forum).

Shedroff (2001: 110) does not go so far as to advocate a rethinking of users as learners, but argues that 'learnability' should be one of the qualities of a positive digital experience: Web designers, for example, should strive to produce sites which allow the user to learn the purpose of and how to use the product easily and efficiently. A

designer's role involves enabling users to learn from their experiences. Thus, a visitor to a Web site can be identified as a learner (rather than as a user), with the objectives of the Web site considered as learning aims. If learning is an inevitable component of digital experiences, it follows that the educational notion of experiential learning - that is, learning through experience - is relevant to the design and development of such experiences.

Experiential learning

The concept of experiential learning proposes that the majority of our learning occurs informally and outside of the classroom. We are learning each day as we go about living and through everything that we do. Learning is as commonplace as breathing, sleeping and eating. When we tackle problems in everyday life, we draw from our pool of past experiences from which we have learned to help us find solutions.

'Every day, we are confronted with problems and challenges which we address by drawing on our experience and by using this experience to find ways of learning what to do in new circumstances...there is no simple demarcation between experience and learning - making sense is always a learning process..' (Boud and Miller 1996: 3,8)

This means that learning can and probably will occur anywhere, and is more than likely to be informal than located within a formal educational environment. Every experience is a potential learning opportunity. Therefore, all digital experiences are possible learning experiences; with experience design effectively being about designing forms of experiential learning.

Therefore, as users browse through a corporate Web site, they are learning about the organization and what it is attempting to say about itself. What they learn during this experience will be stored in their repository of personal experiences and will inform whether they will return. Hence the adage 'a Web site is only as good as the user's last visit', or ensuring a productive user experience, is critical. However, it also highlights the

need to be able to resonate with the past experiences of users, to tap into and prioritise the personal. This is addressed, to some extent, in different design disciplines including that of experience design.

Shedroff (2001) argues that meaningful experiences are critical, emotional and memorable events. Indeed, his book *experience design 1* reflects on some his own key life experiences. Yet there is no reference to the concept of experiential learning, or the wealth of educational research that has been done in this area: Boud and Miller (1996: 10) likewise assert that emotions have a critical role in learning, indeed, that learning is fundamentally emotional. Shedroff's premise is that creating a profound digital experience is important in helping the user transform information provided into personal knowledge. As knowledge, it is embedded in long-term memory. The user then associates the digital product with the positive impact it made, and is therefore more likely to recall and return to the experience. This process is described in terms of a spectrum in which raw data can be transformed into information, which in turn can become knowledge (Shedroff 2001: 35). It is only when data is processed or organized in a meaningful way that it becomes information. Part of the service offered by experience designers is the process of making information meaningful for the user, but it is more diffcult to ensure that users will turn such information into knowledge.

Nonetheless, Shedroff never quite makes the theoretical connection between this model of data transformation and learning. The process that should ideally be facilitated in experience design is not acknowledged as an educational one in which learning occurs at varying levels of depth.

Deep vs Surface learning

Here, educational theories of surface and deep learning are also relevant. These theories describe a spectrum of learning, ranging from the superficial which includes surface or rote learning whereby the learner only retains information in their short-term memory on per needs basis, to deep or profound learning which the learner transforms information

into knowledge retained in their long-term memory. The surface learner is concerned with information (rather than knowledge) that can be memorized as facts, skills or methods that can be deployed as required. This corresponds with Ramsden's (1992) representation of surface learning as external to the learner, perceived by the learner as 'something that just happens or is done to you': information is delivered by the teacher as part of their educational 'service'.

In terms of general online experiences, surface learning is often presumed in the name of usability. That is, the underlying assumption of usability guidelines is that users are engaging with information which can be superficially retained for 'just-in-time' knowledge. The tenets of usability conceptualise users of a system as essentially task-driven and time-poor. As Nielsen asserts, Web sites must have 'zero learning time or die' (2000). In other words, users should not be expected to take time to reflect on information. The criteria for usability correspond with how educators often describe surface learning. Usability principles affirm the processes of surface learning, whereby the user or learner is pragmatic and utilitarian in their approach, acquiring 'only such knowledge as is serviceable in getting him (sic) over the hurdles which he (sic) must clear for the sake of his (sic) advancement' (Popper quoted in Ramsden 1992). That is, the mere retention of information can also be regarded as learning (Vogt et al 2001; Kozel 1998) albeit superficial.

While this is not an argument against the necessity of usability in systems, the preoccupation with ease and speed of use, particularly in Web usability, raises questions about whether the universal presumption of users as surface learners is always appropriate. It establishes a precedent whereby the benefits of deep learning have less appeal as they are associated with challenge and problem-solving – attributes which usability proponents advise that systems should avoid. However, there are situations where usability need not be the primary concern, where the pressure of time is not a critical factor in the digital experience so that the opportunity for deep learning can be fully explored. Indeed, Soloway and Prior (1996) assert that, whether a design is good or

bad, users will persist, particularly if they have a goal in mind: in other words, it is the overall experience that compels users to stay or return, as users will accommodate poor usability and develop workarounds. Video or console games that combine strategy with play, together with complex modes of interaction that contravene many usability guidelines, are examples of experiences that have been designed for deep learning, although their educational merits are controversial. The player is not only learning how to participate in the game (through a series of button presses and joystick movement) but is also continually learning new information, actions and techniques that allow them to progress through the game. Furthermore, this has to be remembered by the player so that they can return to the game over time.

Deep learning involves the development of knowledge that is integrated into learners' personal interpretive frameworks, rather than just the acquisition of information. That is, deep learning, which is constituted by the active selecting, shaping, assembling, filtering and selection of information (Atkins 1994), would occur at the upper end of the data-information-knowledge-wisdom model. Knowledge is a product of deep learning as it is constituted by the personalization and interpretation of information (Dalgarno 2001; Ramsden 1992), and requires internal sense making and abstraction. Schank and Cleary (1995) propose that learning can only occur when our knowledge structures are amended through comparison with and reflection on our experiences. Therefore, deep learning occurs not only through experience, but reflection as well. Norman (1993) proposes two kinds of cognition: the first is experiential cognition, which allows the user to perceive and react to the world around them; the second is reflective cognition, in which the user thinks, compares and contrasts. Because this second form of cognition is slower and more laborious, it is often considered unnecessary in the design of usable systems. Indeed, it is regarded as the antithesis of good usability as it is not easy.

Perhaps this suggests that to affect users in a profound way, we should seek to inspire knowledge acquisition through deep learning (rather than just mere information retention through surface learning) in users. This means operating at the level of the experiential

and reflective – no small task for either designer or user. The designer must develop an experience that persuades the user to invest time in achieving an objective. The user has to be enticed to surrender their time to a reflective experience, which in online terms, could be likened to browsing. It suggests an activity that allows the user to work at their own pace (fast or slow), to muse upon their findings before making a decision. This concurs with educational strategies for student-centredness, which include allowing learning to occur at a time, pace and location determined by the student (Evans and Fan 2002).

Student-centred learning = user-centred design?

Student-centred learning emphasises the different ways that people learn, as well as the necessity and value of tailoring education to the expectations of learners, thus making it more accessible to a wider range of learners (Campbell 1999). That is, it acknowledges diversity in learning needs and styles. Likewise, user-centred design proposes that consideration of the end-user is paramount in the design of a system if it is to fulfil the requirements of its target audience, and offer adaptivity and flexibility to users. In other words, it too, recognises differences in users.

The parallels between the theories and practices of user-centred design and student-centred learning are many, as seen in Soloway and Pryor's (1996) proposal for user-centred design to be renamed learning-centred design. They argue that the design aims are essentially the same in terms of reducing the user's cognitive load, as well as the time and effort spent on tasks, but with a less utilitarian approach than user-centred design by facilitating learning in the process of doing.

Nevertheless, the connections made between user-centred design and student-centred learning are still few and far between. Perhaps this is due to disciplinary divisions: user-centred design has emerged from the contemporary computer science of human-computer interaction, which is concerned, amongst other things, with issues of usability; while student-centred learning is evidently part of a longer tradition of educational research.

Both have firm theoretical foundations but given the comparatively shorter history of computer science, the literature on student-centred learning has benefited from far more investigation. Within education, especially in the areas of e-learning, flexible learning, distance learning, and computer-assisted learning, the seductions of the latest technologies passed long before the 'utopian moment' (Dovey 1996: 109) of the Internet. That is, the inclination to be lead by the technology, rather than be dictated by the needs of the people using it – a charge familiar to those in digital media industries – has been foiled by a strong body of research on student-centred learning which defines it as much more than just the capacity to personalise or customise the educational experience.

Personalising the education process goes beyond allowing the learner to shape their own learning. Rather is it about *valuing* the personal experience of the learner and the contribution it can make to their own and others' learning. It is in this way that the learner is fully engaged. To ground this in digital design, forms of personalization which, for example, allow the user to change the background of a mobile phone interface might acknowledge the user as an individual with particular tastes, but does not necessarily have an impact profound enough to make the product memorable as it still operates at a superficial, surface level. However, the possibility of tailoring the entire environment in a way which suits the user and their situation of use, takes the experience to another dimension. While this may lead to more complex forms of interaction, they also have the potential to be more fulfilling. Indeed, it is the fulfilling interaction that is the basis of deep learning and knowledge acquisition, according to constructivist theories of learning.

Constructivist theories of learning

Constructivist theories of learning propose that:

- everyone has their own representation of knowledge, or constructs knowledge in different ways,
- learning occurs through experience and its comparison with existing knowledge, and
- social interaction is key to learning (Dalgarno 2001).

Constructivist approaches to learning aim to involve the student in actively making meaning through interaction of some sort, mediated or otherwise. The role of the educator is to design this interactive experience. Therefore, there are a number of relationships which must be managed. Firstly, there are the social or person-to-person interactions between learners themselves, as well as between teacher and student. Secondly, where technology is deployed to mediate these interactions, there is the relationship between users and systems. It is not just the latter relationship which is relevant to interactive media practitioners.

The writings of Norman (1993) and McGovern (2002) are consistent with constructivist theories of learning in their arguments that it is human contact that will give a company competitive advantage in the marketplace. In other words, consumers are constantly learning about an organisation through the ways they interact with it. Primacy should be given to using suitable technology which facilitates, mimics or compensates for, rather than avoids, social or person-to-person contact with customers. Technologically speaking, this is done through the design and application of clear cognitive or conceptual models to allow users to understand and navigate their way through a system. The means by which experience designers facilitate processes of wayfinding in a system with the aim of achieving particular tasks, can be equated to the ways educators help learners navigate through information with the aim of enabling their knowledge construction.

Likewise, the management of relationships between learners is also relevant to contexts which are not explicitly educational but facilitated by technology. Where there is user-generated content, there is the capacity for social interaction and hence, for learning and construction of knowledge. Again, such experiences are designable and have the potential to have deep impact if it engages the user emotionally and personally (Kozel 1998; Metros and Hedberg 2002: 191-192). The education sector has designed such learning experiences for centuries with the most basic of technologies, such as having students write letters to a ‘pen pals’ (students of similar age) in another country. Such

opportunities to collaboratively learn about other cultures and nationalities also teach children writing skills, as well as about systems (in this case, postal) that enable such communication to take place. Yet more contemporary forms of this sort of activity, such as chatrooms or other multi-user environments, often have their educational worth questioned. Any digital experience presents learning opportunities, but those aimed at children tend to be much more explicit about this, as in Disney's Club Penguin (www.clubpenguin.com):

'In addition to being a great place to play and have fun, Club Penguin is a great place to learn and grow. On Club Penguin, children practice reading, develop keyboarding skills and participate in creative role playing. By accumulating and spending virtual coins earned through game play kids practice math and learn about money management. The cooperative nature of the Club Penguin environment, along with initiatives such as our secret agent and tour guide programs, also help children develop important social skills while gaining a deeper understanding of their role as members of a community.' (Club Penguin Parent's Guide)

Kids assume a penguin identity, meet and befriend other penguins, as well as play, explore and travel in a virtual world in which they can personalize their own igloo. If this experience of technology can be framed as an educational one, then so too can similar digital experiences with older user-learners, such as *FaceBook* and *MySpace* which encourage learning about others in an online community environment. Indeed, educators are adopting such technologies that have captured the imagination of users and are applying them in formal learning situations as educational tools. Conversely, the theories of teaching and learning discussed above assist experience designers in better understanding the processes of learning that are occurring in any kind of digital experience so they can be designed for greater impact and knowledge production.

Summary

- There are tacit learning processes in every digital experience, such that all users can be conceived as learners.
- Educational theories have merit in highlighting the ways in which users might learn about as well as how to do something, and how appropriate digital experiences can be designed for them which facilitate this.
- Experiential learning asserts that all experiences are learning events and opportunities, whether offline or online, formal or informal.
- Theories of deep and surface learning suggest that learning occurs at different levels. Therefore, digital experiences need not only be relegated to the superficial retention of information. There is potential for users to be profoundly affected through a process of deep learning.
- There are strong parallels between the notions of student-centred learning and user-centred design, and this cross-fertilisation of ideas across the technology and education sectors is necessary and important to digital experience design.
- Constructivist theories of learning offer an insight into designing interaction between people that can be applied to users/learners themselves (as in user-generated content) as well as between an organisation and its customers.

References and Recommended reading

Atkins,M. (1994) 'Theories of learning and multimedia applications: an overview', *Research Papers in Education*, 8(2), pp251-271.

Boud,D.and Miller,N. (eds) (1996) *Working with experience*. London: Routledge.

Campbell,K. (1999, February 25) 'The Web: design for active learning', *Academic Technologies for Learning* [Online] Available: http://www.atl.ualberta.ca/documents/articles/activeLearning001.htm

Dalgarno,B. (2001) 'Interpretations of constructivism and consequences for Computer Assisted Learning', *British Journal of Educational Technology*, 32(2), pp183–194.

Dovey,J. (ed) (1996) *Fractal Dreams: New Media in Social Context*. London: Lawrence and Wishart.

Eden,H.; Eisenberg,M.; Fischer,G. and Repenning,A. (1996) 'Making learning a part of life', *Communications of the ACM*, April, 39(4).

Evans,C. and Fan,P. (2002) 'Lifelong learning through the virtual university', *Campus-Wide Information Systems*, 19(4), pp127–134.

Fischer,G. (2000) 'Lifelong learning - more than training', *Journal of Interactive Learning Research*, 11(3), pp265-294.

Kozel,K. (1998) 'Rethinking the end-user's experience: what filmmakers, teachers and advertisers can teach us', *Emedia Professional*. February.

McGovern.G. (2002, March 18) 'The myth of interactivity on the Internet', *New Thinking* [Online] Available: http://gerrymcgovern.com/nt/2002/nt_2002_03_18_interactivity.htm

Metros,S. and Hedberg,J. (2002) 'More than just a pretty (inter)face: the role of the graphical user interface in engaging eLearners', *Quarterly Review of Distance Education*, 3(3), pp191-205.

Nielsen,J. (2000, July 23) 'End of Web Design' [Online] Available: http://www.useit.com/alertbox/20000723.html

Norman,D. (1993) *Things that make us smart: defending human attributes in the age of the machine*. Reading, Mass.: Addison-Wesley.

Ramsden,P. (1992) *Learning to teach in higher education*. New York: Routledge. pp17–26.

Schank,R. and Cleary,C. (1995) *Engines for Education*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Shedroff,N. (2001) *Experience Design 1*. Indianapolis: New Riders.

Soloway,E. and Pryor,A. (1996) 'The next generation in HCI', *Communications of the ACM*, April, 39(4).

Vogt,C.; Kumrow,D. and Kazlauskas,E. (2001) 'The design elements in developing effective learning and instructional web sites', *Academic Exchange Quarterly*, Winter, 5(4), pp40-48.