

Chapter 2

Breaking Away from Text, Time and Place

John G. Hedberg and Michael Stevenson

Abstract ‘Breaking away from text, time and place’ explores many of the pedagogical options available to higher education instructors that ensure multimodal resources and construction are included in new forms of pedagogy. Through a range of current and emerging technologies that promote co-constructivist, student-centred learning situated in real-world contexts, we can break away from linear and time-constrained delivery strategies to operate with simultaneous delivery of multiple topics and learning activities. No longer are academics constrained to deliver a course following traditional 1-week, one-topic models; they are now presented with options to create new ways of delivering resources, facilitating interactions and providing feedback, all without the need to assume that a physical space for such interactions is a necessary component of learning tasks and activities. Similarly, students are now able to explore new ways of accessing and connecting content to multimodal forms of representation.

Keywords Higher education • Multimodality • Web 2.0 • Cloud Computing • Big Data • Mobility

2.1 Introduction

The first decade of the twenty-first century has seen a marked shift away from the dominance of print-based media towards emerging forms of multimodal representation made possible with the growth of the Internet. Increases in the availability of web content along with a proliferation of web-based applications universally available that serve as tools for engaging with, building upon and remixing that content

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invite questions around what in education terms now constitutes effective teaching and learning strategies in the new millennium. For many in higher education, this new world now upends many traditional models that have defined the roles and relationships of teachers and learners.

This shift from static print media to the new media of the Internet has also redefined our broader relationship with *text*, *time* and *place*. With much of our information, knowledge and communication transduced through web-enabled technologies, our concept of *text* no longer implies linearity or singular authorship. Following the rise of applications in blogging, for example, online authorship is in now in the hands of millions, irrespective of geopolitical boundaries, publishing house protocols or government censorship. In many higher education contexts, teachers and students are interconnected through a wide range of media and information is now being communicated in ways that supplant the traditional lecture. Mobile devices such as smartphones and tablets have ushered in a new kind of anywhere, anytime computing that opens up the potential for learning more readily situated in real-world contexts, redefining our relationship with *place*. Our understanding of *time* has changed, with much of our information relayed in real time across a wide range of media. Increasingly, our personal information and that of our students now resides in ‘the Cloud’, vast arrays of servers and networks around the world that seamlessly synchronise data between devices, enabling our digital world to travel with us wherever we go.

The democratisation of access to content creation and delivery platforms has challenged the traditional role of the teacher in higher education as both the curator and purveyor of knowledge. The ‘wisdom of crowds’ (Kittur & Kraut, 2008) is evidenced in the success of volunteer-driven, multiple-authored websites like *Wikipedia*—and the subsequent demise of counterpart print editions like *Encyclopedia Britannica* (ABC, 2012)—leading us to question underlying notions of authorship and authenticity. At the same time, principles that have culminated in near-universal access to the world’s information are now being turned to business models construed around *Big Data*—including a wealth of information on users’ habits, browsing and search histories, interests, ‘likes’ and friendship networks. At a time when data itself has become ‘the currency of the Internet’ (Cavoukian, 2000, p. 14), the decreasing relevance of old media is being eclipsed by the web, our interactions with it and with one another. Many of our interactions with others, regardless of location, now take place in real time, being collaborative, instant and ‘always on’. Our collective understanding of these changing ways of interaction is only now emerging.

2.2 Rethinking Relationships: Trends and the Technological Change Continuum in Higher Education

In exploring this redefined knowledge landscape, much of the literature has examined technology trends that have shaped the Internet, not all these technologies have lived up to the expectations of higher education. For many, such trends have become

key points of reference when exploring how pedagogies can adapt to the broader developments in technology. In addressing possible trends of the last few years, terms like *Web 2.0* (O'Reilly, 2005), *Cloud Computing* (Katzan, 2010) and *Big Data* (Haff, 2012) have been developed to explain the trends that mark differential points on the continuum of technological change. Terms like these have also been closely examined and adopted, in both research and practice, by many educators in their attempts to better understand the relationship between the educational affordances of emerging technologies, the skills needed for teachers and learners to properly employ them in education contexts and the extent to which such technologies disrupt and/or align with existing pedagogies. These and similar terms have also emerged in close relationship to preceding trends, being as much defined by what they *are not* as by what they *are*. In theory, trend-related concepts explored in this chapter are language constructs used to make sense of the enveloping technological change.

Understanding technology trends has, accordingly, become an important part of the milieu of higher education in the twenty-first century. One problem with attempts to understand trends is that they are social phenomena: fluid, dynamic and rarely fixed. They can diversely represent anything from recurrent themes, popular and influential buzzwords or ways of thinking, to common elements between what may otherwise be disparate concepts but which resonate with communities of people. Technology trends might, for example, be reflected in the uptake of a software service, the entertainment value of an Internet *meme* or online video which has 'gone viral', the projected product sales of a new piece of hardware, the number of times a particular news story has been broadcast through social media or the development of a relatively new 'game-changing' technology. Although this open-ended view of technology trends is difficult to consistently or accurately articulate, nonetheless it represents broader perspectives through which educators can positively interpret an exponential rate of change. In practice, therefore, we suggest that trends themselves represent viewpoints that exist within specified parameters (e.g. a set timeframe or particular set of technologies) on the continuum of technological change. Inasmuch as trends serve a purpose, helping educators to speak a 'common language', they also limit the extent to which we can view technology as generative, extensible and a catalyst for disruptive pedagogies.

More often than not, developments in educational technologies build on pre-existing structures and ideas. Current key trends like those indicated in *The Horizon Report* (Johnson, Adams, & Cummins, 2012) represent a kind of repurposing of the pre-existing trends that have shaped our understanding. The development of concepts to explain key differences in technology is a process of 'retrofitting' concepts onto the continuum of technological change not unlike the idea of grammar as a system of rules imposed on the continuum of language. For example, the Fig. 2.1 illustrates some of the key changes technology-assisted writing with the impact of personal computing, the Internet, Cloud infrastructure and mobile devices.

As Fig. 2.1 suggests, many of the hardware and software interfaces that we use when writing evolve from pre-existing ones. For example, the customisable, touch-based software keyboards that are widely common on many mobile devices build on

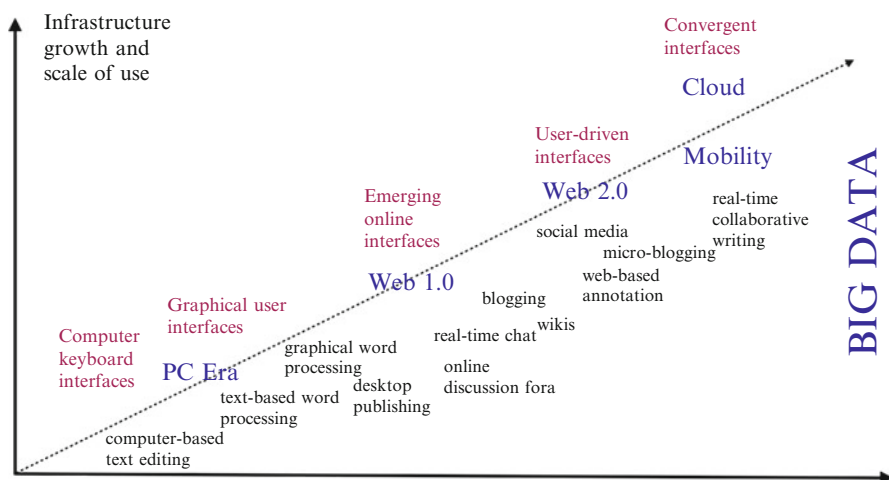


Fig. 2.1 Retrofitting trends and tools in technology-assisted writing

physical computer keyboard interfaces popularised during the PC era, while the kinds of graphical user interfaces that were developed by many Web 2.0 start-ups built on graphical user interfaces developed in early visual operating systems. Similarly, many tools are closely related and suggest a more evolutionary development in these technologies over time. For example, Cloud-based tools like *Zoho*, *Microsoft Live* and *Google Docs* all facilitate real-time collaboration between many writers in the same document, with the same real-time technology having been available in older tools like Internet Relay Chat (IRC). Likewise, online discussions and microblogging through social media widely incorporate the same technology that was used in older Web 1.0-style online discussion fora.

In all of these instances, the retrofitting of older technology interfaces and tools on newer technologies has, in spite of the evolutionary nature of these developments, been reflected in exponential growth in infrastructure and the scale of use. This is perhaps most clearly seen in the rise of Web 2.0, which built on Web 1.0 technologies at the same time as representing a trigger cause behind the ‘read/write’ web and the enormous growth in web-mediated participatory cultures. O’Reilly’s (2005) articulated concept of *Web 2.0* incorporates a close discussion of what he at the same time termed ‘Web 1.0’. This discussion incorporated a number of binaries to illustrate the relational differences between *Web 1.0* and *Web 2.0*, such as ‘static’ versus ‘dynamic’, or ‘publishing’ versus ‘participation’ (p. 1–2). By defining *Web 2.0* in close relation to ‘Web 1.0’, O’Reilly’s two terms serve as key semantic identifiers that have considerably shaped much of the discourse in higher education in recent years. Of course, such identifiers exist not without being challenged, as web founder Tim Berners-Lee indicated shortly after *Web 2.0* became a part of the web lexicon:

When asked if it's fair to say that the difference between the two might be fairly described as 'Web 1.0 is about connecting computers, while Web 2.0 is about connecting people', Berners-Lee replied, 'Totally not. Web 1.0 was all about connecting people. It was an interactive space, and I think Web 2.0 is of course a piece of jargon, nobody even knows what it means. If Web 2.0 for you is blogs and wikis, then that is people to people. But that was what the web was supposed to be all along. And in fact, you know, this 'Web 2.0', it means using the standards which have been produced by all these people working on Web 1.0'. (Anderson, 2006, p. 1).

These kinds of semantic arguments are important on a number of levels. As the literature reflects, *Web 2.0* as a term with an accompanying set of discourses (including the situated practices, expectations and shared understanding of the tools) has been embraced by many in higher education. For some, the concept serves as a paradigm that promotes 'accord between the design of technology and the student-centred and interactive approaches being advocated by contemporary educational leaders' (Bower, Hedberg, & Kuswara, 2009, p. 1153). Others have come to regard it as a necessary platform for twenty-first century civics and citizenship (Crocket, 2011), a set of tools for collaboratively engaging in spaces beyond the traditional classroom (McClure, 2010) or a vehicle for synchronous, real-time interaction which promotes more effective collaboration between learners (Hrastinski, 2008; Bradley, 2010; Conole & Alevizou, 2010; Kittle & Hicks, 2009). On examination of these recognised affordances and learning benefits, we can see that there is more of an overlap between 'Web 1.0' and 'Web 2.0' than may have been acknowledged within higher education. As Berners-Lee's argument above implies, student-centred learning, the development of online citizenship or use of real-time interaction were all *possible* with the early Internet. What has changed is our mindset towards using them, shaped by the discourses around us, along with the *time* and *place* in which we now live.

If we accept *Web 2.0* as a term denoting O'Reilly's concept of 'the read/write' web—a web fundamentally about 'people to people' connections—then we also place emphasis on *Web 1.0*, quasi-historically, an implied reference to the early developments of the Internet itself. For example, through the digitisation of print media resources, the standardisation of hypertext transfer protocols (HTTP) and hypertext markup language (HTML) and the rapid rise of Internet search engine start-ups, each success was clearly predicated on the open architecture and standards of the World Wide Web that Berners-Lee advocated. In other words, *Web 2.0* presupposes *Web 1.0* and both terms need to be understood in relation to one another. Of course, *Web 1.0* represents much more than the elements described here. In defence of Berners-Lee's argument, such a way of thinking is problematic when we consider that there is still much of the early web that remains unexplored in education; but when our mindset has shifted to a newer way of thinking ('Web 2.0'), we may fall into the trap of becoming more attached to trends and trend-related concepts than to the transformative and generative potential of the underlying technologies.

Technology trends like *Mobility* have, for example, very real implications to closing off many of the generative uses of technology that the open standards of the

early Internet helped create. In terms of technology affordances, the *Web 1.0/Web 2.0* binary reminds us that technology affordances necessitate a technology-user relationship and our relationship with technology may be shaped as much by the discourses around us as by our own direct experiences with it.

The following table outlines some of the possible approaches to addressing five key trends that have been recognised in the way that they broadly describe the development of the Internet during the past decade: (1) *Web 1.0*, (2) *Web 2.0*, (3) *Cloud Computing*, (4) *Mobility* and (5) *Big Data*. These concepts can be loosely interpreted as follows through the lenses of *text*, *time* and *place*. Doing so sheds some light on how we understand our relationship with technology in the twenty-first century, including the key developments that we collectively regard as significant for educational discourse:

While the above table goes some way towards describing the narrative of the Internet in recent years and some of the many axioms and even broad generalisations we have come to accept in our discussions, what it does not show are the fundamental relationships among the so-called trends and the extent to which the boundaries between them can be both blurred and contested in a similar way to Berners-Lee's challenge to O'Reilly. Many of the current Cloud service offerings and their deployments in education institutions are highly effective enablers of many pre-existing *Web 2.0* applications and tools (Stevenson & Hedberg, 2011). An institution could, for instance, deploy *Google Apps for Education* at very low cost, scaling immediate access to applications like *Google Docs* and *Blogger* for teachers and learners within that institution. Therefore, while *Cloud Computing* introduces new services, standards and protocols, it also builds on pre-existing ones; what invariably changes is the scale, prevalence and context of use. Likewise, *Mobility* represents new hardware and software platforms, evidenced by the astronomical growth of smartphones and the proliferation of mobile apps. Many of these apps are simply repurposed versions of many pre-existing *Web 2.0* applications and tools such as *Facebook* or *Wordpress*—or, similarly, versions of Cloud storage services like *Dropbox* or *Google Drive*.

The relationships between the trends described in Table 2.1 are in some ways more important than the ideas informing our discussions of the trends themselves. Figure 2.2 illustrates the relational development among these trends, illustrating the continuum of technological change as more of an ongoing process of layered services and infrastructure rather than a series of mutually exclusive technology 'stages'. The horizontal axis indicates the linear development of these trends, showing rough points in time at which they emerge as recognised concepts (i.e. not necessarily when the technology itself becomes available). The vertical axis shows the scale of the technology in terms of participatory cultures (i.e. broadly speaking, the number of people using it) and the level of infrastructure implied by the prevalence of the technology.

As Fig. 2.2 suggests, the end point of the timeline indicates the present—a convergence of what we have so far called *Web 1.0*, *Web 2.0*, *Cloud Computing*, *Mobility* and, most recently, *Big Data*. What is perhaps most striking is the scale of development and use. While the standards of the early Internet through *Web 1.0* still

Table 2.1 Technology “Trends” of Text, Time and Place

Technology ‘trend’	Text	Time	Place
Web 1.0	Web pages are largely the domain of enthusiasts. However, web page ‘publication’ doesn’t require authorial vetting. This begins to open up changes in attitude to authenticity/authorship on a small scale. Early Internet protocols such as HTTP and HTML make it easy to semantically and technically link one page to another, thus building the networked nature of the web	Early, static web pages emphasise linearity: manually created and updated by tech-savvy enthusiasts. Web consumers begin to recognise that the early web is not fixed. For example, ‘last accessed’ in academic journals indicates acknowledgement that web pages are subject to unflagged change (unlike peer-reviewed, edition-stamped print media). Early forms of real-time interaction exist, e.g. IRC, but these are also the domain of enthusiasts	Web pages are globally accessible where there is connectivity and user access. <i>Place</i> begins to be less defined in terms of how people relate to information. <i>Place</i> is sometimes not defined at all—e.g. some web pages that appear to be in one place but exist in another
Web 2.0	The term <i>Web 2.0</i> is coined to reflect the ‘read/write’ web—which builds on many so-called Web 1.0 standards. <i>Web 2.0</i> sees a proliferation in web-enabled applications and tools that allow users of the Internet to participate and create. For example, blogs provide anyone with basic word-processing skills a platform to publish their ideas. Web 2.0 also encompasses multimodal forms of digital representation, e.g. the rise of YouTube and ‘grassroots video’. In terms of authorship, we see democratisation of the generative processes—anyone can be an ‘author’—and of course there is a backlash to this in schools and academia. Web pages also include material from multiple (sometimes thousands) of authors, e.g. Wikipedia	Web pages become much more multifaceted, including spaces with a range of media types and places for interaction, all of which mean that they become dynamic, updated all the time. Tools like RSS facilitate this, allowing content to be aggregated from other sources and updated in real time. The <i>immediacy</i> of the web is recognised as both an advantage (in terms of currency, relevancy, etc.) and disadvantage (in terms of authenticity, trustworthiness, etc.)	On a massive scale, for the first time, we realise that the web is really one global community. Terms like ‘the blogosphere’ reflect this—i.e. we talk about one place in an attempt to simplify what is very complex. Virtual worlds, e.g. <i>Second Life</i> , really come into being, and we have a strong sense that virtual reality is a reality and <i>place</i> refers as much to virtual as to physical

(continued)

Table 2.1 (continued)

Technology 'trend'	Text	Time	Place
Cloud	Cloud technologies scale Web 2.0 applications and tools across education institutions and enterprise. People begin to rely on these more and as we do, our data (at first trivial stuff and then large amounts of valuable, private, important stuff) shifts over to the Internet. Metaphors like 'the Cloud' become a way of simplifying the complexities. All sorts of texts are shared with others, e.g. collaborative documents—we become, to varying degrees, comfortable with the idea that so much of our stuff is 'out there'	There is increasing emphasis on '24/7' access to content. Very little on the web is seen as static or fixed. There is closing of websites like <i>Geocities</i> which prompts web communities of archivers to try and save the early web for posterity. We are now expecting everything to be 'in sync' much of the time. Thanks to developments in cellular and broadband, the concept of being online moves to '24/7', even when the user is not participating, consuming or generating content	<i>Place</i> is really difficult to fathom. We know that in physical terms, our data is in a multitude of countries on server racks in server farms but we wouldn't be able to pinpoint all of it. We become comfortable, to varying degrees, with these ambiguities. In terms of our own daily practices, we begin to expect that our data goes everywhere with us—this seems to be the trade-off against growing privacy and security concerns and the use of our data by third parties
Mobility	The concept of a 'web page' has to shift to meet mobile computing. Many web pages and websites have to be rewritten for mobile access. In part because this is such a difficult undertaking, we see the massive rise in apps and the 'appisation' of the Internet. Apps begin to represent <i>text</i> in a very different way—many apps are treated as texts themselves	Mobile computing opens up further points of real-time interaction between people. It is used to coordinate crisis management during disasters (e.g. the Haiti earthquake in 2011) and also for other humanitarian efforts (e.g. doctors relaying information to one another about the spread of waterborne disease in sub-Saharan Africa). No one expects any more that access to the Internet <i>has</i> to be on a traditional computer at set times. Note that the 'always on' feature of mobiles changes the way we use laptops, e.g. we now expect that laptops are 'instant on' or 'always on'	Mobile access to the Internet completely redefines our relationship with place. Most of the world's population access the Internet through a mobile (not laptop or desktop). The Internet goes where we do, it becomes more inextricably woven into our lives and the rather personal relationship many of us have with our mobiles reinforces this

Big Data	Growing numbers of businesses and other organisations recognise the value of data that is being generated through participatory cultures online. For example, businesses with financial interests understand that large amounts of user data can inform more effective product development, 'targeted' advertising and customer service	Big Data becomes an important part of how we understand key changes in <i>time</i> . For example, during the Arab Spring, the magnitude of change is reflected in the large number of real-time social media status updates from citizens of countries undergoing political upheaval. Many of these updates are 'harvested' by journalists and other media outlets	Location-based services become more insidious as many social media apps track the location of a user's phone and report this back to online servers for aggregation. More and more online data is geo-specific and this is used to inform much of what we view on the web
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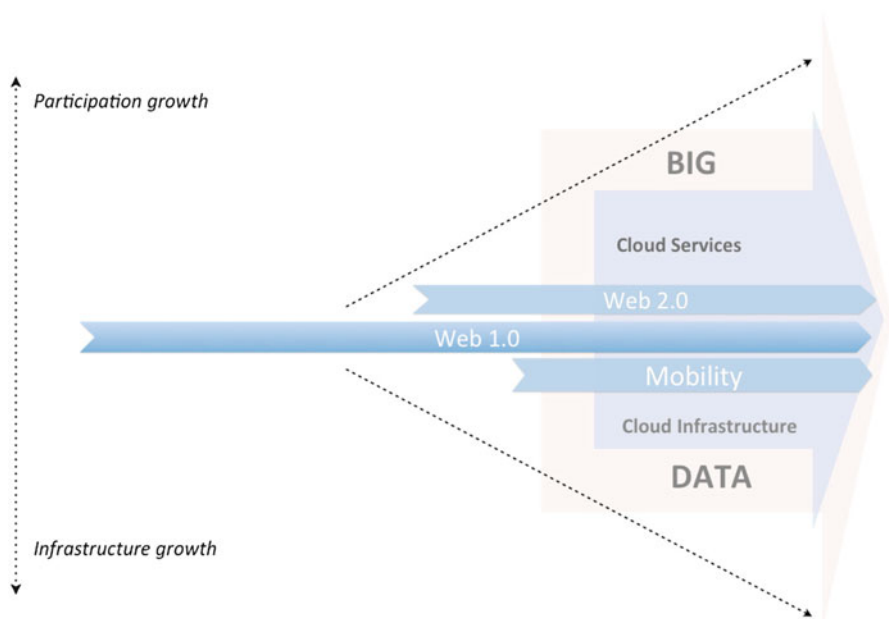


Fig. 2.2 Technology trends over time

underpin much of what currently defines the World Wide Web, it is *Web 2.0* and *Mobility* that have, through the scaling of Cloud services and infrastructure, led to our emerging understanding of *Big Data*—much of which includes the massive amounts of user-generated data in very recent years through Web 2.0- and Cloud-based platforms, but some of which still include data from the early years of the Internet. The nature of these trends as *convergent* means acknowledging their cumulative and relational value if we are to harness the technology tools around us, and this involves breaking away from any preconceived need to see such trends as mutually exclusive, self-contained or frozen in time.

2.3 New Media Literacies

As we have seen in the preceding section with its focus on technology trends, the present opportunely represents a point in time at which we can examine the juncture between any number of concepts making up the shifting global landscape of the twenty-first century. In furthering our attempts to make sense of these concepts as teachers and learners, much of the literature on web-enabled learning is increasingly exploring the growing number of new media literacies that reflect how web tools and content are used in teaching and learning. As newer forms of digital interaction and representation emerge, they open up new dimensions for both understanding and

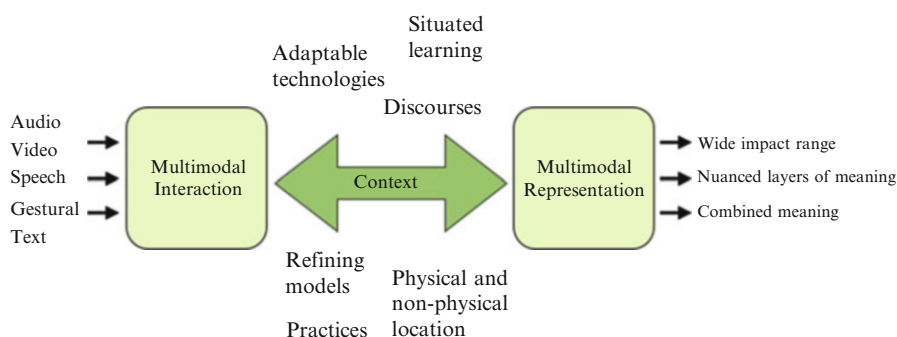


Fig. 2.3 Multimodal interaction and representation

representing *text*, *time* and *place*. Some have acknowledged that the pedagogies underpinning the relationship between multimodality and existing teaching and learning practices have given rise to many of the new ‘digital’ concepts explored here. In this light, the literature on new media literacies like ‘collective intelligence’ or ‘transmedia navigation’ (Hague & Payton, 2010) offers some important signposts for how web-informed pedagogies in higher education might be effectively leveraged to reshape institutional teaching and learning, including approaches to content creation and delivery, course structure and fostering a kind of learning that, ideally, moves beyond the institution itself. The increasing focus on these literacies likewise highlights their transubstantial, fluid and at times contestable nature. Figure 2.3 illustrates some of the broader relationships between multimodal interfaces and representation.

As Fig. 2.3 implies, many of the technology interfaces with which we now interact afford a much wider range of input types, including newer forms of gestural input, enhanced speech recognition and devices that enable ‘grass roots video’ (Johnson, Levine, Smith, & Stone, 2008). The context relationship between these interfaces represent opportunities for learners to adapt technologies to their own personal styles of learning, situate their learning in both physical and non-physical spaces and play a more defined role in shaping the discourses and practices that define their own learning.

Cazden et al. (1996) have argued that ‘the multiplicity of communications channels and increasing cultural and linguistic diversity in the world today call for a much broader view of literacy than portrayed by traditional language-based approaches’ (p. 60). In spite of this assertion, many in more recent years have suggested that education institutions have been slow to adapt to established and emerging forms of digital interaction and representation (Kennedy et al., 2008; Prensky, 2001, 2005; Williams, 2008). In their extensive review of *Web 2.0* in higher education, Conole and Alevizou (2010) note the ‘dearth of evidence looking at the ways in which these new technologies are or could *change* learning and teaching *practice* [our emphasis]’. While such assertions echo longstanding arguments like Cuban (2001), maintaining that technology falls short of empowering learners where it is

simply fashioned to fit existing practice, changes to practice fundamentally involve changes to *discourse*. In what they describe as a ‘sociocultural approach to literacies’, Lankshear and Knobel (2007) present a very broad perspective on both old and new literacies, suggesting that ‘if we see literacy as “simply reading and writing”—whether in the sense of encoding and decoding print, as a tool, a set of skills, or a technology, or as some kind of psychological process—we cannot make sense of our literacy *experience*’ (p. 2). By suggesting that experience plays a fundamental role in shaping our literacies—regardless of the type of media or context—this argument reinforces the need to incorporate a fuller understanding of multimodality in higher education teaching and learning practices. It also suggests that we need to be more aware of how our practices shape these discourses and the experiences of learning through multimodality.

Laurillard (2006) has also investigated technology learning processes in higher education, examining the need for the academic professional as teacher to move beyond learning experiences shaped by dominant knowledge acquisition discourses of ‘reading, critiquing, interpreting and articulation’ towards processes emerging from a better understanding of the adaptive and interactive potential of available technologies, noting:

the power of the interactive computer to do a lot more than simply provide access to information. It makes the processing of that information possible, so that the interaction becomes a knowledge building exercise. Yet the excitement about information technology has been focused much more on the *access* than on the *processing* it offers (p. 7).

Technology devices can personalise the experience of learning to an extent not previously possible. Most notably, through the growing interest in Mobility, individuals now tailor specific learning experiences to their own needs through ubiquitous 3G and LTE access to Internet connectivity and the use of personalised apps on what are, essentially, very personal computers. As illustrated in Fig. 2.1, this technology builds on adaptive and interactive uses of earlier interfaces and tools, with implications for the scale of use and growth in infrastructure. Newer forms of gestural interaction with the device move the learner beyond the traditional input/output nature of the earlier interfaces. For the vast majority of smartphone users, most of these learning experiences are informal and *just in time*, largely unplanned, unsanctioned by educational discourse and beyond the immediate locus of institutional control. Nonetheless, through a better understanding of the interactive and adaptive potential of mobile devices, higher educators can begin to address many of the problems identified in the literature that stem from a more limited understanding of adaptability and learner interaction. The individual apps on smartphones provide possibilities for managing learning processes with an individual app supporting specific processes, such as capturing ideas and images, collecting evidence, organising and sequencing, producing a multimodal artefact and sharing any of the processes or resources with others.

When examining some of the multimodalities enabled by current technologies, much of the meaning made in digital and temporal sequences reflects layers of nuance. By contrast to the meanings often implied in print media—those associated with *singular* authorship, publication at a *fixed* point in time and tendency towards

sense-making through *linearity*—these layers of meaning are often established more subtly through generative, often non-linear iterations emerging from diverse participatory cultures which are primarily collaborative in nature. There are nuanced layers of meaning with a wide range of Web 2.0- and Cloud-based applications and tools, learners can easily collaborate in real time, using multiple technologies and platforms to co-author their *text* in any number of ways. Further, the revision history snapshots available in web applications record the development of the document over time and enable collaborators to pinpoint key changes and roll back to earlier versions if needed. While learners in the same physical *place* might discuss their ideas face to face while collaborating in real time in the online space, learners in different locations can talk in real time as well as observing changes to the document near instantaneously. Similarly, services like *Diigo* and *Bounce* enable learners to annotate standard web pages, generating rich, multilayered discussions on key ideas, points of contention, or further ideas to be explored. By layering meaning on top of the original text, learners are able to more fully articulate their understanding of *text* through their experiences of multimodal representations over others texts, with far fewer constraints than those traditionally established by *time* and *place*.

One of the most interesting phenomena to have emerged into mainstream recognition is *transmedia storytelling*, ‘the technique of telling a single story or story experience across multiple platforms and formats using current digital technologies’ (Wikipedia contributors, 2012). Remixing material from movies, songs and other media to create new versions of popular narratives—*transmedia storytelling* has garnered considerable attention recently with the commercial rise of ebooks, ereaders and tablets and their associated online stores. These devices serve as tools for augmenting and reconfiguring *text* through the enabling of *time* and *place* beyond the constraints of traditional teaching and learning spaces. *Mobility* has also seen a movement away from the more traditional forms of computer user input such as the mouse and keyboard towards emerging forms of gestural input on the touch interfaces. Along with the increased prevalence of multimodal forms of representation in teaching and learning experiences or the media, these developing forms of gestural input are redefining the parameters of the digital world in which we participate, learn and teach online. Although the technology appears simple, tools like these open up potential for learners to become fully active participants in the way they make sense of *text* on the Internet, including older ‘Web 1.0’ static pages. Most importantly, these gestures underpin the learner’s interaction with web content, enabling a much broader range of experiences in digital representation than previously imagined.

2.4 Frameworks Moving Forward

We have critically examined some of the technology trends and new media literacies informing current discourses in higher education and have suggested that by understanding the affordances of technologies that have characterised the shifting

knowledge landscape from the time of the early Internet to the present, educators need to break away from the traditional knowledge constraints implied in our understanding of *text*, *time* and *place*. Most importantly, higher educators need to be aware of the fluid (and at times overlapping) relationship between traditional and emerging trends and concepts—to properly engage with the challenges presented to preconceived notions of teaching and learning. Sometimes, for example, this may involve experimenting with very new technologies when little might be known about how to effectively use them. Such experimentation is a vital part of ‘tapping into’ the experiences of learners engaging with the forms of digital representation described in this chapter. Fundamentally, higher educators themselves need to be actively learning in the digital world, incorporating their experiential understanding of phenomena like multimodality into what will be a continual re-evaluation of their teaching and learning practices, the values they place on *text* and their expectations about the learning *time* and *place*. The success of this multifaceted, evaluative approach to meaningful technology integration is informed by the recognition that while the broader knowledge landscape is shifting, each part of our digital world is made up of layers of nuance. Accordingly, our understanding of new media literacies needs to be both broad and flexible as we engage with the technologies.

Moving forward, what are some indicators of a workable *application* framework? Bower et al. describe the development of ‘a Web 2.0-enabled learning design’, proposing Anderson and Krathwohl’s (2001) Taxonomy of Learning as a framework for this development. Such a learning design arguably represents a way of integrating both current and future Web 2.0 applications into curricula with a broader understanding of both the different knowledge dimensions (factual, conceptual, procedural and metacognitive) and a range of skills and cognitive process dimensions (remembering, understanding, applying, analysing, evaluating and creating) (2009, p. 1161). Further, in proposing this design, the authors draw attention to the importance of design *resilience*, suggesting that where technology is seen ‘as only a mediator of pedagogy and content’, it is possible for frameworks like these to align with both current and future technologies. Such discussions further highlight the need for framework and design flexibility both now and in the future.

Another framework oriented around flexibility has been explored by Goodyear and Ellis (2007), investigating differences between the instructor’s designed learning task and students’ actual learning experiences. Their study points out the problematic nature of technology-enabled teaching as design in tending towards one of two extremes: teacher directedness (e.g. in a heavily prescriptive task) or student centeredness (e.g. oriented around experiences in co-constructivist learning). While Bower et al. (2009) suggest that accord between student-centred learning and technologies like *Web 2.0* is now possible, the authors of this study remind us that such accord is often dependent on the task and the resulting learners’ translation of it. Further, Goodyear and Ellis (2007) assert that tendencies to either teacher directedness or student centeredness need to be challenged in order to better understand ‘the centrality of students’ learning activities [sic]: that what matters most is what students actually *do*’ (p. 340). In framing this argument, they address the importance of situatedness of learning and suggest that while ‘a good task specification *affords*

certain kinds of learning activity', teachers and students jointly shape the learning environment, culture and the experience of learning (p. 341). Knobel and Lankshear's (2006) argue for new media literacies as *experiences*, the notion of 'translation' explored here reinforces the view that effective learning task design should be informed by an understanding that moves beyond a limited view of technology trends into the multimodal experiences that embody the kinds of digital and temporal sequences now possible.

This chapter has considered the technological change continuum and shifting knowledge landscape through the collective lens of *text*, *time* and *place*. In so doing, we have suggested that understanding technological change in higher education necessitates a closer understanding of the relationship between the trends and constructs used to describe the rate, scale and nature of the changes around us. This process of 'retrofitting' concepts on top of change is essentially a sense-making process that is both useful and limiting—useful because it offers a common language for meaningful technology integration and limiting because of what such language struggles to fully articulate in a time where the rate of change is exponential. In recognising that many of the trends referred to in the literature are not mutually exclusive and that there is often considerable overlap between concepts, stages and the kinds of technologies available, we argue that higher educators need to make sense of trends as *convergent*. Further, by addressing the new media literacies as tools that help articulate our *experiences* of learning in a web-mediated world, sense-making is as much about exploring layers of nuance in digital and temporal sequences as it is about understanding the broader trends. These two viewpoints—the micro and macro—are, likewise, important for higher educators to consider when looking back at past achievements and looking forward to future possibilities. The Internet and the world that it has become, present formidable challenges and opportunities to higher education. While effective knowledge and application of emerging trends and new media literacies require so-called twenty-first century skill sets like collective intelligence, transmedia navigation and real-time collaboration, many of these skills simply define good learning practices regardless of technology use. Higher educators need, therefore, to think strategically about the kinds of learning now possible in the twenty-first century when searching for the right tool for the right job. Developing application frameworks that incorporate flexibility, experience, generativity and, most importantly, openness will ultimately ensure that the scale of learning possibilities keeps pace with the scale of change well into the new millennium.

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