MATURE CYNICS AND FLEDGLING ECLECTICS: ELABORATING INSTRUCTIONAL DESIGN FOR THE NET GENERATION

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Introduction

This chapter analyses how faculty are currently dealing with the needs of the "net generation" in the realm of higher education (HE) and use of e-learning. It reviews the socially orientated Web 2.0 technologies and their impact on teaching and strategic policy. It also assesses whether a model of generational distinctions is applicable to the methodological practices of teaching and learning.

The current cohort of new academics belong primarily to Generation X (born between 1965 and 1980). These individuals have experienced a surge in technological developments but also significant economic upheavals. Potentially this may leave them with a particularly sceptical outlook upon life in general. They are the "cynics" in the title of this chapter: in Greek Philosophy, the cynics were renowned for flouting social conventions as well as for their confrontational style of engagement.

As time progresses, the contemporary student population, though an ever-fluctuating cohort, will be led by members of the net generation (born between 1981 and 1994, and also known as the "millenials" or "echo boomers") and their younger siblings, the "digital natives" (Prensky, 2001). These are the "eclectics" of the chapter's title, so called because from the myriad of social technologies (such as Facebook, Flicker, Blogger, Hi5, Twitter etc) on the Internet, they are able to choose, aggregate and apply technologies in a variety of forms (mobile and networked) and settings that enable them to stay informed and in contact with their peers. In so doing they demonstrate the ability to multitask and process multiple streams of information at the same time. They use technology differently from older generations. For example, the 2007 ECAR (EDUCAUSE Centre for Applied Research) study of around 27,000 undergraduate students and their use of information technology reveals an increase in personal ownership of laptops to 75 percent, from 52 percent in 2005 (Salaway and Boreson, 2007). It also notes that the majority of students possess at least two pieces of "personal technology", usually a computer and a mobile phone, with media players coming in a close third. Moreover, the net generation's approach to daily life is profoundly shaped by the technology they use. This is now clearly mirrored in the way in which current primary and junior school children are using technology in their daily lives. 1 in 5 children have partaken in some form of online or distance learning, and the presence of technology in the classroom has become second nature – with the use of video, podcasts and online assignments so commonplace (Greenwood, 2007). This awareness and familiarity with technology has implications for the manner in which HE will choose to engage with future implementation of technology and infrastructure. This generation's access to technology has a direct impact on the amount of time individuals spend working online (including study, work and recreation); the average is 18 hours per week per students and 59% of this generation indicate a clear preference for, at the very least, moderate access to technological implementations.

So the question arises: how can the cynics engage the eclectics in the process of learning? Can academics adopt and adapt to the new demands of new learners, in a timely and pedagogically suitable way? This chapter reports on research undertaken to answer this

question, in the form of a survey of the current uses of technology in higher education and the impact of technology on staff in their daily lives and academic endeavours. The research also involved a pilot participatory action research methodology.

Technology and pedagogy

There have been many different approaches to e-learning, and various models and methods are regularly developed to harness the potential of technology for education. Examples include Palloff and Pratt's Online Communities (1999) , Salmon's 5-Stage Framework (2000), Collis and Moonen's Flexible Learning Approach (2001), Laurillard's Conversational Framework (2002), the IMS Learning Design (2003), and Britain and Liber's Framework (2004). All of these make reference to the increasing presence of e-learning tools (from simple html pages through wikis, blogs, SMS and so on) and how they may begin to be integrated into our teaching practice.

The Next Steps

One of the more recent developments in the field of online learning is the Personal Learning Environment (PLE). A PLE is a system that helps learners control how and what they learn, supported and facilitated by technology. For example, it may take the form of an editable virtual learning environment (VLE) in which an individual learner is able to choose a particular pathway or series of tools that aid them in achieving the designated learning outcomes based on their prior experience and knowledge. Or it may be entirely flexible, based only on the learning outcomes and identified assessment criteria. In this way individual students engage in a module of learning and they themselves choose what tools are required to demonstrate learning and how to present material for assessment. They aggregate a set of 'personalised' tools that collectively demonstrate and calatlogue their process of learning. In this way PLEs enable learners and academics to integrate tools and resources in a form of knowledge construction. They also allow the potential for learners and academics to co-create that knowledge and collaborate in its subsequent dissemination. Interestingly, this activity is consistent with constructivist learning theory, which sees learners as the makers of knowledge and meaning. The potential of PLEs for facilitating new approaches to learning (by interaction with others) (Doise and Mugny, 1984) is supported by Web 2.0 technologies and their emphasis on social activities.

The term "Web 2.0" refers to the tools and technologies that have characterised the web since the early 21st century, in particular those associated with sharing, innovation and collaboration – for example, wikis, blogs and social networking sites. These tools have a "gravitational core" (O'Reilly, 2005) rather then any set of defined parameters. With the emergence of the Web 2.0, the way we gather information from the Internet has fundamentally changed, as has the type of information we gather. It is now primarily derived from and generated by users themselves, via social software such as blogs and the now ubiquitous social networking sites such as Facebook and MySpace. It has also changed in appearance; part of the success of Web 2.0 is its inbuilt concept of sharing and providing opensource solutions. Opensource is a development method that harnesses multiple streams and processes (i.e. many independent developers may be working at once on a variety of needs) to enable cheaper, quicker, more advantageous and more transparent means of creating and answering software needs. This leads to multiple aggregations, creations and re-imaginings of Internet tools and resources.

Web 2.0 information often takes the form of "micro-content", an example of which is the folksonomy, a way of categorising data on the web using tags generated by individual users.

For example, I take a picture of the Trinity Library Long Room and provide a series of keywords (the "tags") related to the Book of Kells. An architect who has similar images posts keywords related to their discipline – for example, "Deane and Woodward" (the architects of 1860). Yet another user provides keywords relating to the *Star Wars* Jedi library whose design was based upon the Long Room. How is this of any use? The creation of personal metadata such as this is primarily a social phenomenon, which is its core strength. Each tagset inevitably feeds into one another and quickly creates a mass of interrelated links and resources. By harvesting these via a social bookmarking tool such as Bibsonomy (http://www.bibsonomy.org/help/about/) and displaying them as either "tagclouds" (see Figure 1) or lists, users can quickly identify either likeminded individuals or co-researchers. So rather than get lost in a tangent such as the Star Wars universe, I can quickly discover what other links scholars of illuminated manuscripts (such as the Book of Kells) have identified.

Figure 1:
An Example of a TagCloud Based on the Key Term "Web 2.0" (Cremonini, 2006)

Etienne Wenger's work is central to our understanding of and application of online interactions. His concept of "communities of practice" (Wenger, 1998) has a great deal of resonance in the current interactions of e-learning and Web 2.0. The idea of communities of practice is based around three elements – the domain, the community and the practice – and the interactions between individuals, their joint purposes and their actual endeavours. Although Wenger sees the community of practice as a means by which to promote collaboration online, the online community of practice is often misunderstood as a mere website, network or shared concern. These may indeed form the constituent parts of an online community but they require activities to realise their potential – for example, problem-solving, requesting information, reusing assets, discussing developments, mapping knowledge and identifying gaps.

These kinds of activities can be easily undertaken using Web 2.0 tools – for example, users could collect information via Google News then create a comparative analysis via the blogosphere (the collective term for blogs) using Memeorandum

(http://www.memeorandum.com/). They could mark up the information in del.icio.us (http://del.icio.us, another example of social bookmarking software) and then use *Tagcloud* (http://www.tagcloud.com/) to identify gaps in the information. In addition, users can map their online activities by using a tool such as *Trailfire* (http://trailfire.com/pages/about/idea.php), which enables users to navigate their searches by providing additional user information from the online community, members of which may have undertaken similar enquiries.

In summary it may be seen that there is a clear reason one might embrace these Web 2.0 technologies within HE. They offer a way in which the learner engages in the process of knowledge construction in a clear and transparent manner; information acquisition can be mapped and reviewed, collaborative endeavours may be analysed and individual developments can be aggregated and assessed. Combined, this series of iterative developments (by group or individual) may be used further in a reflective process charting both personal growth and competency over the period of designated learning and beyond. However before embracing these technologies one needs to address potential issues that may arise with regard to the un-fettered use of such technology. Learners will require clear direction and scaffolding from their academic facilitators as to how they might best achieve the designated learning outcomes. They will need the ability to discern the provenance and value of information they may acquire within the process. In time both the learner and teacher will be in a position to navigate the myriad of tools available and decide collectively which and when it may be fit for pedagogic purposes.

Embedding support structures for e-learning

In the mid-2000s, two policy initiatives foresaw the significance of the relationship between e-learning and the skills needed for lifelong learning. First, the Higher Education Funding Council for England (HEFCE)'s strategy document on e-learning (Beaty et al, 2005) explores recent history to provide a focus for future development that "enables institutions to meet the needs of learners and their own aspirations for development". Second, the European Commission's recommendation on key competencies for lifelong learning (European Comission 2006) hones in on the importance of digital competence as part of its priority focus on Information Society Technologies (IST) (that is, those technologies that underpin the creation and sharing of knowledge). Digital competence includes not only a sound understanding of primary applications but also how these may impact on individuals in their personal, social and working lives. The recommendation goes further, including the capacity for collaborative networking, information sharing and searching and retrieving critical data; it also adds the capacity for reflective and responsible attitudes to information engagement. There is another key competency that is also noted: "the ability to pursue and persist in learning, to organise ones own learning ... both individually and in groups" –that is, learning to learn.

At the same time as there is increasing pressure to incorporate e-learning as both a part of and platform for lifelong learning skills, many institutional strategic plans are still grappling with the difficulties of establishing a technological infrastructure for e-learning, including the diminishing discoverability and retrieval of data and materials (i.e. how to manage the ever increasing amounts of data generated electronically – registration, assignments, reports, research etc), and the need for increased maintenance across disparate systems (Gaible, 2004), and the long-term financial commitments involved. The fact that an investment in e-learning and technology is now part of the fundamental running costs of

any institution, rather than a nominal project over a finite period, has had huge implications on local support structures.

The Irish Information Society Commission (ISC, 2005) identifies several areas crucial to a successful engagement with the range of information communication technologies (ICT). Chief among these is the need to be innovative in the way we employ ICT. Innovativeness will provide the necessary bridge to make universal access to and usage of ICT a reality, underpinning a complete social uptake and integration of technology into everyday family, working, community and learning life. In higher education, such innovations are taking place in relation to managed learning environments, which are being carefully deconstructed and refocused on user-orientated systems (such as PLEs and Web 2.0 tools, discussed above), which allow greater creativity and adaptation on the part of the end user.

Higher education's end users are its learners (or even clients), and they may well dictate the future offerings of higher education because they are able to make informed choices about where they study and how they choose to do so, whether online, synchronously or asynchronously, or in a face to face method with suplementary technologies (e.g. video, discussion or presentation tools). Oblinger and Oblinger (2005) refer to a particular pedagogical concept that has appeared in conjunction with this change, that of "learning to be" (Bisoux, 2007). This concept is based on an apprenticeship model in which, for example, learners are taught how to *be* midwives, rather than simply learning the necessary discipline-specific criteria. In this way it is possible for the individual to move beyond the classroom and theory and begin to apply the newly acquired knowledge in an experiential manner, all be it in a simulated or case based environment. With a combination of online and traditional teaching supports, it is possible to see how such a flexible approach would wrap essential content delivery with reflective practices and practical implementations. Applying a pedagogic model such as this, will enable the teacher / facilitator to provide the necessary scaffold whereby the learner gains access to the appropriate content via a blend of traditional teaching and online interventions (e.g. focused information seminars or 'troublesome knowledge' encounters followed by access to online case studies and simulations). The learner is able, throughout the process, to collect reflections, commentaries, queries and additional information in their chosen format (e.g. a blog, group wiki, tagset etc) all of which can be readily accessed when the need arises or when confronted with new situations (such as a new patient scenario, case study or even an online assessment). In this way each learner creates a personal learning portfolio.

As we begin to embed e-learning into our curriculum either sureppitiously or by design we need to ensure that it is integrated in an appropriate manner. Biggs' (1999a) concept of constructive alignment offers a means by which we might ground our practice so that learners are not only central to our approach but implicitly involved in the dynamic of a process-driven curriculum. This reinforces the way in which we might consider the use of ICT within the day-to-day practice of curriculum design. This is not to say that we become over reliant on infrastructural implementations, such as institutional managed learning environments (MLEs) or portals, to guide our development, but that we acknowledge the role that the individual learner brings to the process, with their experience and knowledge of current technological paradigms. Utilising this information, we may open the way in which we address our curriculum design and begin to apply (technological) solutions in a manner that befits the needs of the programme, the academic and the learner.

The role of academics will change as e-learning is increasingly incorporated into and transforms traditional learning environments. Anderson *et al* (2001) provide a clear set of criteria for defining and assessing teaching engagement and presence within an online environment. They see academics as having to negotiate three clear roles when engaging in an online discourse or modular development: design and administration, facilitating discourse, and direct instruction. Add to this the variable needs of learners and their preferred styles (for example, global or millennial learners (Mestre, 2007)) and the size and intricacy of the task at hand becomes apparent. Unfortunately, as yet there seem to be few rewards for the lone academic undertaking such a task (Collis and Wende, 2002). Skilled personnel will be required to assist academics in making the technological and pedagogical shifts associated with the incorporation of e-learning and the move to a more student-oriented and personalised programme.

Indeed, if the changes outlined above are to be effective, they need to be undertaken as a re-imagining and fresh implementation of learning outcomes, rather than the slow, costly and piecemeal approach that has characterised the use of enhanced learning (Collis and Wende, 2002).

Research study

The aim of the research exercise was to gather evidence of the presence of technology (Web 2.0 in particular) and how it is integrated into current academic practice and to see whether there was any notable generational divisions.

Data Gathering 1

An online survey was developed to:

1. identify the current and intended future use of technologies by higher education staff in their teaching practices
2. explore any generational distinctions in the implementation of technologies.

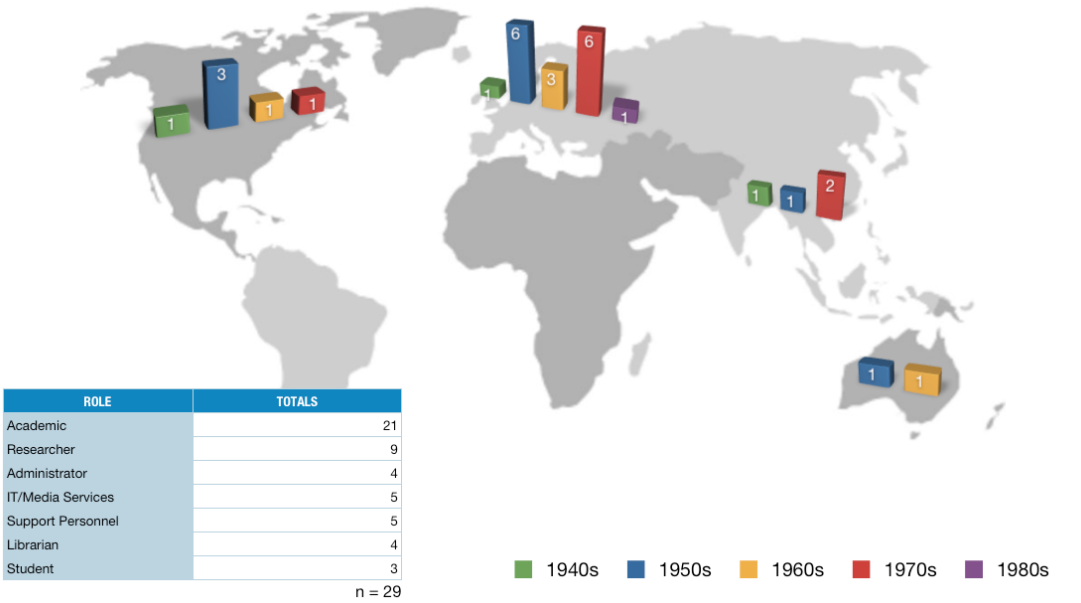
Survey Monkey (http://www.surveymonkey.com/) was chosen to deliver the questionnaire. This free online software allows for rapid dissemination and response collation. An online resource that outlines popular current technologies was developed as a reference guide for use in tandem with the survey (see http://www.ucd.ie/teaching/projects/Technologies.html).

The survey was sent out to several local and international cohorts, including the Educational Developers Irish Network (EDIN), the Association of Learning Technologists (ALT), and the Elearning Europa Community.

Results

Twenty-nine questionnaires (n29) were fully completed. Figure 2 highlights the varied countries, roles and decades of birth of those who responded. Respondents were of different generations (1940s–1980s), with the majority (38 percent) born in the 1950s. Just over half (52 percent) of the surveys were completed by higher education staff from Ireland and the UK, whereas others were completed by international higher education staff from, for example, Australia, the US and Singapore. Roles were varied among the respondents with the majority (72%) having an academic post, although many also stated that they had other roles and duties within their institutions.

Figure 2: Online Survey Responses: Country, Role, Decade of Birth



ROLE	TOTALS
Academic	21
Researcher	9
Administrator	4
IT/Media Services	5
Support Personnel	5
Librarian	4
Student	3

Current and future use of technologies

To identify technologies in current use, the survey asked respondents to list their five most frequently used technologies. Responses were varied and ranged across hardware and software, which we have categorised as assisting either teaching or research and communication activities. Table 1 outlines some of the technologies listed. A third of identified technologies may be considered Web 2.0 in origin, in reference to a latter point (re: future usage) it is interesting to note that where some individuals are currently using these tools on a day-to-day basis, others are only just begining towards integrating them in their daily practice.

Table 1: Technologies in Daily Use

Teaching	Research/Communication
VLEs	Google applications*
E-Assessment Tools	Email
Virtual classrooms	Internet
Multimedia Software	Ejournals
Smartboard	MS Office
Podcasts*	USB Key
Blogs*	PDA
Data projector	Skype*
Delicious*	Mobile Phone
Wikis*	Facebook*
Camtasia	Windows Messenger

*Those marked with an asterisk may be considered Web 2.0 Technologies

Respondents gave various reasons for using these technologies, including the desire to enhance student learning experiences and the view that technology was an essential

component that facilitated the completion of work in an easy, convenient manner. There was no distinctive difference between generations in the use of these technologies.

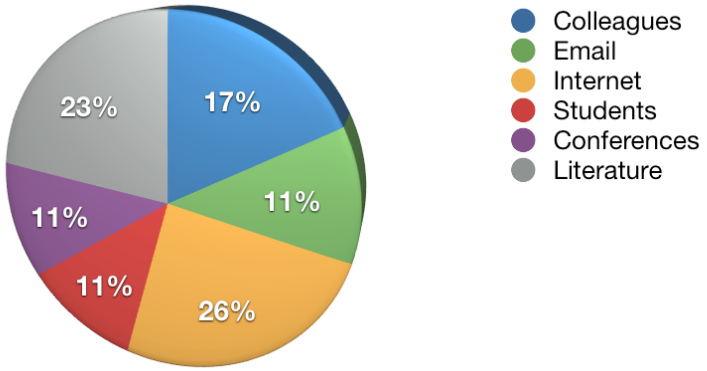
Respondents were asked what technologies they would like to use in the future and what they perceived as the benefits of doing so. Many of the responses were very similar to those technologies mentioned by other individuals in response to the previous question on current technologies.

Similarly, the perceived benefits of applying these technologies generally focused on "enriching student learning" by creating "self-directed", "collaborative", "asynchronous", "student-centred" and "interesting" learning activities in current teaching practices. Other reasons included that technology could improve efficiency in course delivery by aiding different student learning styles and helping those with different needs. Finally, respondents said that future technologies would support them in their own research and aid their own teaching practices.

Training and awareness
The majority of participants (72 percent) indicated that they did not undergo any training to use current technologies but stated that they were self-taught, or learned through trial and error. For technologies such as VLEs and specialised software (for example, MS Office, SPSS), however, 48 percent of participants indicated that they did receive formal training, which was generally provided by their institutions.

Awareness of new technologies was primarily generated by the Internet (26 percent) and current literature (23 percent). Discussions with colleagues (17 percent) also raised respondents' awareness of technologies. See Figure 3 below.

Figure 3: Sources of Awareness of New Technologies



Data Gathering 2

Invitation to play
To provide some triangulation of the data gathered, an emic qualitative methodology was employed using Participatory Action Research (PAR). The emic approach is particularly useful when confronted with a situation where researchers are embedded in the research area and

there is a need to step back, review and assess different potential angles of enquiry. A method of doing this is the concept of the grand Tour enquiry (Spradley et al., 2004). This enables the researchers to pose the broadest possible questions / queries to the research cohort and allows them to extrapolate why and how they categorise their thoughts (and answers).

A pilot study was undertaken to assess the methods, means and tools that individuals use in the area of online course design and implementation. Participants were invited to play a game designed to elicit a response to the dilemmas and issues faced when developing an online course or event. As a result of the game play, they were able to map the process they would undertake to complete the design and implementation of online materials to support their chosen course. In addition, individuals were prompted to engage fully and share their experiences both positive and challenging.

The pilot game was undertaken by two participants, one from academic faculty, the other based in an IT support role. Their game map centred around providing a means of support for an online discussion forum and dissemination of information and material to the wider cohort (involved in the programme module). A key factor in the perceived success of the forum would be its accessibility by a dual cohort of professionals and students. Three potential solutions were proposed by the IT person and examined fully across a wide range of needs and possible supports. A mutually acceptable solution was reached, but potential issues were noted, along with their possible impacts for the roll out of the service.

The final score

The game process allowed the participants to explore in depth a series of solutions and issues that arose from their differing points of view. The academic member of staff had a clear design in mind, but was unable to decipher the multiple options available to her. The IT individual suggested potential solutions and worked with the academic to rule out certain elements that would not be effective or viable. The need for an open access forum led the participants to consider a VLE that was independent of the institution, and also the possibility of customising the solution. As a by-product, the participants learned about each other's work and its benefits. For example, the IT staff member learned that the academic community wants to involve people in continuing professional development and integrate their needs into curricula; the academic learned that IT services provide a wealth of information about current and future developments both locally and internationally.

Discussion

A recent EDUCAUSE Center for Applied Research (ECAR) report (Sreebny, 2007) noted a distinct lack of actual implementation of social software, such as wikis, at an institutional level (this is mirrored in the findings from the survey where only a third of technologies sited where Web 2.0.) There may be several reasons for this – for example, a lack of rapid deployment and also "strategy fatigue" (although this may be a double-edged argument, with institutions on the one hand not wishing to deploy "new" technologies at the same time as the technologies are perceived as being in a constant state of flux and development). Also when learners arrive in an institution they may be already accessing and familiar with other (and external) social applications, so there is little need for a local version.

Several key points arise from the two data gathering exercises. Of note is the way in which the respondents to the survey acquire new knowledge about technology, in particular the

lack of open access and dissemination via their own institutional services and their preferences for referring to colleagues and the literature. From the PAR activity, we noted that it was only through direct dialogue with an academic member of staff that the IT individual provided an array of potential options and information about future initiatives.

There was no evidence of a generational distinction in the current and future identified use of technology. This may be explained partly by the way the survey was disseminated – that is, online. This may have inadvertently deterred some people from participating. We intend to follow up with further PAR initiatives and focus groups.

Two interesting issues were noted in the responses to the question about future use of technologies. First, the rationale for use of future technologies was focused on benefits to learners rather than to academics; second, the technologies identified were more often than not already noted by other participants in their current use. Does the latter suggest a hierarchy of technically minded academic users, or does it suggest that each person uses many of the current technology options in differing situations? And does the need to address the learners requirements suggest an awareness of the socially orientated make-up of many Web 2.0 tools?

Is it the case that the use of Web 2.0 tools rather than the more "common" technologies (for example, MSOffice, Blackboard and so on) suggests that some academics are flouting the perceived norm (that is, institutional policy), and are these academics confronting the technical and pedagogical implementation of mainstream teaching i.e. the behemoth of institutional VLE integration (where large systems are in situ, but used to a small degree of their full potential)? Or are they seeking new challenges in the way they teach by engaging in innovative technologies alongside institutional supports and services?

Conclusions

Some questions arise about the cultural impact of Web 2.0. Is it enabling the unhindered introduction of technology in everyday practices (communication, knowledge construction sharing etc.), and are these practices being employed in higher education by the academic cohort? With the prevalence of new technologies and the rapidity of change in them, is it wise to engage? Alexander (2006) argues that the "lowered barrier" of entry to use of these tools will have a marked cultural impact on the way we undertake our education. Not only will it be easier for all to access and learn how to use the tools, but perhaps the ability to set up a tagset on a particular topic of enquiry, for example, may override the need required to meet and discuss face to face.

From the results of our survey, we note that individuals are engaged in experimentation with or without local support. How can we best integrate and maintain the innovative teaching practices of these individuals, as well as a broader range of their colleagues? The PAR study suggests that educational technologists have a crucial role to play in bringing the new, the traditional and the institutional infrastructures together. Are these the individuals with whom to collaborate and indeed elaborate the instructional design of teaching for future practice?

Biggs (1999b) refers to learning as a way of interacting with the world; as we learn, our exposure to and understanding of phenomena change, enabling us to see the world differently. It is within this process that "The acquisition of information in itself does not bring about such a change, but the way in which we structure that information and think

with it does" (Biggs,1999b, p. 60). It does not therefore matter that the (physical) tools with which we learn may change, but the one important thing remains the same – our ability to aggregate, digest, converse and promulgate new ideas from the world of information that we encounter everyday.

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