Editorial: Communication Technology and the World Wide Web – a Paradigm Shift in Teaching and Learning?

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What is considered the communication revolution of late started about half a century ago at the Advanced Research Projects Agency (ARPA) when in 1962, the visionary Dr Licklider and his team started work on making computers interactive, and 'talk to each other'. And although the groundbreaking experiment of 1969 which was to send coded messages some 390 miles from one computer to another initially failed, it nevertheless set the foundations for our digitally connected world (see Box).

> The plan was unprecedented: Kleinrock, a pioneering computer science professor at UCLA, and his small group of graduate students, hoped to log onto the Stanford computer and try to send it some data. They would start by typing "login," and seeing if the letters appeared on the far-off monitor.
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> "We set up a telephone connection between us and the guys at SRI...," Kleinrock ... said in an interview: "We typed the L and we asked on the phone, "Do you see the L?"
> "Yes, we see the L," came the response.
> "We typed the O, and we asked, "Do you see the O."
> "Yes, we see the O."
> "Then we typed the G, and the system crashed"...
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> (Gromov, 2011, p1)

Much has changed since then, from the size of computers to the development of mobile devices that allow us to access, collect and transmit data almost continuously, communicate with friends, family, conduct business in trains, and pay our bills from the street café. The teenage generation, for whom a life and world with immediate and constant access to information, computers, Twitter, Facebook™ and other social and visual media associated with Web 2.0 is second nature, may not appreciate that the internet is only about as old as they are themselves.

In fact, the modern internet or World Wide Web (WWW) as a means to facilitate information sharing is based on an idea and computer programme of Tim Berners-Lee made public in 1991 (Gromov, 2011). This year's 20th anniversary is then a timely occasion to reflect on the impact of the net and its associated communication and networking technologies on teaching and learning in higher education. Have they really had the fundamental effect on learning, research and teaching that their inventors and promoters predicted? Or, is Woolsey (2008) right when she proclaims that despite all investments in technology, software and computers – educators and education have largely failed to capitalise on the new opportunities which present themselves, perpetuating instead '[t]he medieval models of university education …, even as texts

are now transmitted electronically instead of in conversation or on paper' (2008, p. 215).

As so often, there are no simple, straightforward answers. Certainly, on the face of it, the character of studying for a degree at higher education institutions (at least in industrialised nations) seems to have changed dramatically due to the now ubiquitous availability of the internet and communication technologies on campuses. Yet, it is also true that learning styles are not fundamentally changed by being able to search the library catalogue online instead of flipping through paper cards and browsing book shelves. Many academics even fear that instead of enhancing student learning there has been a decline associated with web-induced plagiarism, uncritical information consumption and students' writing abilities stifled by texting and tweeting conventions.

A cursory review of literature on the subject reveals, firstly, that pedagogically valuable, imaginative and transformative applications of new technologies in teaching and learning require considerable engagement, resources and thought. Online teaching for example tends to require two to three times higher time input than conventional provision (Arsham, 2002). The most successful examples derive generally from a collaboration of subject *and* technology specialists. Secondly, uncritical and unadulterated adoption of available technology seldom works. Research shows that informal use of social media is not readily transferred to formal applications as in communication tools for work or university studies (Beuschel and Draheim, 2011). This is likely to be one reason why universities find it effective to use Facebook™, virtual campus tours, blogs and such like means to (casually) support students' transition to tertiary education (see, e.g. Millar *et al.* (2010), while educators later struggle to engage these very same students in online discussions or reflective blogs unless it is an assignment. In that vein, Alexander (2008) suggests that the limited number of users (students and instructors) of intra-institutional networks curtail dialogue and discourse as it is the antithesis of the openness and searchability of blogs, tweets and wikis etc. which, practically by chance, self-reinforce interaction and reaction by other known and unknown individuals. This means educators need to be selective and discernable in how and what technologies they use for what purpose. What is needed in respect to many leisure and commercial applications such as wikis, blogs and Wikipedia is a critical discourse on the impact of this technology on privacy, ownership, copyright laws, democracy and governance to raise awareness of the potential negative (personal) consequences that a careless engagement with these tools may entail (Alexander, 2008, p.200).

The digital world is changing at rapid speed and it is difficult to stay on top of developments. Time and resources as well as a certain amount of risk-taking are essential to further the effective exploitation of communication technology and IT and to stimulate 'new' teaching and learning (Woolsey, 2008). The present conditions in UK higher education are unfortunately not best suited. Anything that could negatively

impact on students' satisfaction with their learning experience is to be strictly avoided as national surveys[1] on the matter offer the news media data that is transferred into more or less meaningful league tables and university rankings which define the success or failure of institutions. Nevertheless, students can also be enthused and excited by new technology, with their learning and understanding improved in new ways and their satisfaction increased.

Whether built environment education lends itself more than other disciplines to the use of new technologies in teaching and learning and whether the built environment (BE) has engaged more or less than academics from other disciplines with the topic is difficult to tell. Yet, from the beginning *CEBE Transactions'* articles bear witness to BE teachers' attempts and willingness to experiment and reflect on the use and integration of technology in higher education learning and teaching. While some examples merely have transferred traditional practices (albeit successfully) into a digital realm (e.g. Crow, 2006; Ellis *et al.,* 2005), others ambitiously sought to prompt student reflection of the impact of media and technology on BE working practices (e.g. Grierson, 2004; Dunne, 2006, Barrett, 2009 and Brown, 2010). Amongst the contributions in this issue Comiskey and McCartan's article on 'Video: An effective teaching aid? An architectural technologist's perspective' we find a good example on how technology can be used to support visual learning styles that often appeal especially to design students. As educators, we need to further our knowledge in the use of technologies in learning and teaching by actively building on these experiments. In most cases, the experiments and use of technology have paid off and students at least appreciated, if not wholeheartedly enjoyed, the changes in pedagogy.

And, while the spark in students' eyes should perhaps be incentive enough for educators to explore and experiment with the technology, additional incentives in the form of promotion, awards, funding and recognition will be required by universities and the government to harvest the rewards in the next two decades and achieve the paradigm shift in teaching and learning that only just has begun.

All this said it would be unwise to change the style of learning to only 'new learning'; rather, traditional and new styles should co-exist and complement each other in higher and further education offering the best preparation and education possible for future graduates and the workforce. Other contributions in this issue therefore address innovations in teaching and learning such as teaching focused topics in intensive blocks and the impact of this style of teaching on student learning (see Kemi Adeyeye *et al.'s* article) or how to ease the transition form secondary to tertiary education (see Eadie and Millar on student induction). Furthermore, new learning or not, somebody still needs to decide on the content of degrees. Wisniewska's 'Occupational Knowledge: the Role of 'Business' in Creating and Socially Codifying New Ideas' and

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[1] The National Student survey solicits feedback from final year undergraduate students in the UK on their experiences in respect to teaching and learning on their programme/course. See, http://www.thestudentsurvey.com/ for details.

Laing *et al.'s* contribution 'Built Environment Higher Education in Scotland: Pressures, Challenges and Change in Uncertain Times' address these important challenges.

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