

Technology Enhanced Learning: addressing the gap between aspiration and implementation: *International issues*

A report from CAPITAL: A Harnessing Technology research project undertaken jointly by the University of Nottingham and Sero Consulting Ltd working in association with Becta.

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Summary

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Summary of Changes

Version	Section(s)	Synopsis of Change
0.1	-	-
0.2		Many additions
0.3		Rewrites and updates of claim sections
1.0		Major rewrites of Claims 7 and 10; minor rewrites of most other claims; additional general references

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Executive Summary

This report covers, in varying degrees of depth, the international evidence pertaining to each of the Claims. It delivers key observations from such material – relevant to ICT in education across all sectors in England, but with prime focus on schools and colleges.

As well as conclusions on Claims, the report provides a framework methodology, grounded firmly in Comparative Education, for generating this kind of material. It also describes the main sources of general information on ICT in education (at all levels) in the 248 or so countries of the world.¹

Several Claims, including 7 and 10, seemed to us to justify substantial investigation of their international aspects. Another, 8, seems very UK-specific. Others were in an intermediate position.

Several claims sections were abstracted from much longer reports which were produced first; then revised, cross-correlated with UK views, and finally edited to fit the length restrictions. In one case, claim 10, we provide (in Appendix 5) the full material.

There is a great deal of information on ICT in schools – the issue here was to find the time to analyse it all. It is a similar situation with universities, but in that case earlier comparative projects like Re.ViCa have helped to form a baseline for comparisons. Though there are many country reports for secondary education and ICT in it, there seems to be no global synthesis.

In contrast, for the college sector (FE and Skills) the key problem is *lack of information* in journals and conference proceedings, and even in blogs. We do provide some interesting exemplars which might later be used as the basis for case studies.

The claims and the international evidence for them

1. Claim 1: the international material supports the UK conclusions.
2. Claim 2: the international material supports the UK conclusions. In particular, the Claim is regarded as obvious in FE and HE circles.
3. Claim 3: the international evidence comes mainly from the US where they have been active in this area much longer than in the UK. In general the information supports the UK conclusions.
4. Claim 4: the international evidence supports the UK conclusions.
5. Claim 5: the international evidence comes mainly from the US where they have been active in this area much longer than in the UK especially in high-stakes summative assessment. In general the information supports the UK conclusions.

¹ See <http://www.virtualcampuses.eu/index.php/Country> for an analysis of the issue of “country”.

The main report also has footnotes where relevant.

International issues

6. Claim 6: as in the UK the evidence for this claim is more mixed, but there is evidence of considerable activity in the area.
7. Claim 7: there is a high level of international activity, especially but not only in the US – but the area is still rather underdeveloped and evidence is not clear. It is expected e.g. in the EU that further studies will be required.
8. Claim 8 appears too UK-specific for international evidence to be relevant.
9. Claim 9 is nowadays (as opposed to a few years ago) regarded internationally (in many countries, not all) as obvious.
10. Claim 10 is as hard to deconstruct internationally as it is in the UK. But in the US and Australia the level of informal learning activity is high. What is less clear is how it compares with the level of formal CPD, how the balance between the two is handled and what is the relative effectiveness. Some caveats are given, e.g. from development work.

The Appendices contain more detailed and administrative information. In particular, Appendix 4 is a useful reminder that countries often believed by ICT experts to be similar to the UK are not at all similar to the UK in terms of their educational systems. With this caveat, we close the Executive Summary.

Overview

This report covers, in varying degrees of depth, the international evidence pertaining to each of the Claims. It posits a framework methodology for generating comparative material – and then delivers key observations from such material – relevant to ICT in education across all sectors in England, but with prime focus on schools and colleges.

Several Claims, including 7 and 10, seemed to us to justify substantial investigation of their international aspects. Another, 8, seems very UK-specific. Others were in an intermediate position.

If one wanted proportions, then the schools:FE:HE balance is roughly 1/2:1/3:1/6. On the whole we say even less than that fraction about HE in this report since the EU Re.ViCa project (for which one of the CAPITAL staff was lead researcher) has produced in December its Final Report and a Handbook of more than 100 pages.² In time there is likely to be a UK-specific analysis of this report but at this stage all we have are general “European” conclusions – which we shall cite here where relevant. In addition, several of the Claims were judged by the CAPITAL research team to apply only to schools.

The report represents the “art of the possible” within the effort and time parameters – the methodology had to fit the limited effort available.

Methodology

The principles of the analysis done here are drawn from the discipline of Comparative Education.³ However, a number of methodological compromises had to be made in order to obtain useful results within the effort and time parameters.

Initial ideas – an approach followed in earlier work for Becta (2009) and recent JISC work – were to identify a set of target countries of accepted relevance to England (the “base point” of our comparative study). This preliminary work was done in early 2009. It was not straightforward because although there is a generally accepted set of comparator countries (such as Denmark and Finland), they seemed to us to be chosen more for traditional reasons and because they had high PISA scores or broadband penetration, rather than because their size, GNP, socio-economic or educational systems were compatible with England.⁴

A fuller treatment of this issue is in Appendix 1.

The other key issue is that, even if one has an agreed list of countries, a country by country approach is infeasible. Experience gained from the Re.ViCa project was that a useful “country report” on the educational system and university-level e-learning in a developed country of medium size could be done in a few days’ work – especially for those countries which either produce reports in English (like Commonwealth countries) or (like OECD and many EU countries) have reports in English

² For all outputs see <http://revica.europace.org>

³ See http://en.wikipedia.org/wiki/Comparative_education

⁴ For example see the description of the Dutch schools system later – very different from England.

International issues

produced about them. However, as one moved beyond such countries (as Re.ViCa did in later months) the effort per country grew substantially – as did the linguistic barriers.

The problem becomes worse when one adds in the requirement to report on schools and colleges – typically much less information is available in English. Colleges in particular are a “Cinderella” category when it comes to reports from international agencies – with a few exceptions like CEDEFOP (2009). An additional complication is that in larger and typically more federal countries, school-level education is devolved to states even if university-level education is not (or not to the same extent), vastly increasing the amount of comparative material that would have to be collected.

A different kind of problem is that the level of detail required for CAPITAL is far greater than normally looked at in comparative reports – we are not looking for *which* institutions are “notable” or “innovative” but for *why* they are and in *what* particular detailed way.

Thus in summer 2009 it was decided to change the approach to a more pragmatic one. The international group decided to work *outwards* from each claim, using their skill and judgement to decide which countries were likely to generate evidence relevant to the claim – and then work to find that evidence. Naturally the countries already considered (by several authorities, all with different views) as relevant would typically be looked at first, but no attempt would be made to produce *comprehensive* country reports as done by Re.ViCa for post-secondary e-learning or by OECD for the overall schools system. Re.ViCa did manage in the end to produce a report for each of the 248 countries in the world but many are very brief and the effort parameters exceeded the budgetary effort substantially – the gap being bridged by volunteer and student labour.

Even the more pragmatic approach led to some problems, but more for typical project reasons – the limited effort available to this work item, losses of staff and the deployment of key staff on other activities.

A methodological issue is that the particular style of “Claims” has many UK specificities and in a few cases it was not possible to match the “Claims” scenarios with comparable situations in other countries.

Further progress would seem to depend on a hybrid approach, moving from country level to topic level and down to claims level and back up again as the situation requires – and included potential reformulation of claims. All of this would have taken elapsed time and burned up effort and affected the core (UK) part of CAPITAL, in particular pushing it towards a benchmarking project, a very different animal.

On the positive side, the project has benefited from a substantial number of inputs which did not require any expenditure from CAPITAL. These include:

- Ongoing input on HE and FE from the Re.ViCa project, due to the overlap of staff
- Visits to a number of non-UK educational institutions at school, FE and HE level, carried out during other missions
- Meetings with experts at a number of conferences and meetings.

These have all been taken into account. Details of the conferences and meetings are given in the Appendix – brief notes on the visits are below.

Visits

Visits since April 2009 have been made to the following institutions:⁵

1. Ross Tensta Gymnasium, Sweden – a sixth form comprehensive school serving a deprived multi-minority community outside Stockholm.⁶
2. Colorado Virtual Academy, a virtual school under the Charter Schools programme, based near Denver.⁷
3. The Colorado Community College System, including visits to Community College Denver and Front Range Community College, plus a meeting with the Head of E-Learning for the System.⁸
4. Two Swedish universities who teach many MSc courses in English, some online – Lund University (near Malmo) and KTH, the Royal Swedish Institute of Technology, Stockholm.⁹
5. Visits to several advisory agencies including WCET and EuroPACE.¹⁰

Helicopter conclusions

In this section we provide an overview – done in the same way as was done for Re.ViCa – of our conclusions as to the state of the art of ICT in education across the world, in the light of perceived relevance to issues active in England. Because of the work done in Re.ViCa it is easiest to start with HE.

Higher Education

The overview that follows is adapted from the key paper Bacsich et al (2009).

The use of ICT in learning is now widespread in universities across the developed world – far more extensively at far greater scale than many commentators realise

In terms of planned sizable university-wide e-learning initiatives, Re.ViCa has identified around 170 in Europe with some 20 more existing as EU projects past or present. In the Rest of the World there are over 300. Thus there are now around 500 such university initiatives across the world – and of course many more at lower levels of activity (departmental etc).

⁵ In the 12 months prior to that (i.e. in Year 1 of CAPITAL) there were other visits including to the National Industrial Training Organisation in Brazil.

⁶ See <http://www.tea.edu.stockholm.se>.

⁷ See <http://www.k12.com/cova/>.

⁸ See <http://www.ccs.edu> and especially <http://www.cconline.org>

⁹ See <http://www.lu.se/lund-university> and <http://www.kth.se/?l=en> UK.

¹⁰ See <http://www.wcet.info/2.0/> and <http://www.europace.org>

There are currently 86 countries with one or more universities running such initiatives – considerably more than expected when the project started. Many of these, but by no means all, have considerable elements of distance learning.

Of the Programmes, Re.ViCa identified 52 as “national initiatives” – those Programmes where a country (or state within a country) has aimed to take action across the country.¹¹ Typically most countries have only *one* national initiative extant at any one time – Swedish Net University, Swiss Virtual Campus, Syrian Virtual University, etc. However, a surprising number of countries including in Europe have none – or none currently. In contrast, a few countries, especially the UK, seem to have an inexhaustible appetite for national initiatives, despite several high-profile failures such as the Interactive University and UKeU. Thus there are in fact just over 20 different countries with one or more national initiative.

There is a feeling in some circles that “Europe is tired of national initiatives”, but the truth is more complex. One country retains an inexhaustible enthusiasm for them (the UK – at least until recently), and they continue towards the east end of the EU (e.g. Bulgaria and Estonia) and just south of the EU (e.g. Egypt).

Work towards the very end of the Re.ViCa project, not yet fully correlated into the main database, suggests that these numbers will be revised upwards in 2010. In particular, many more initiatives have been recently found lurking behind linguistic barriers in Hispanic America – and it is expected that more will be found in the Middle East and some Asian countries. In addition, recent information collected at Online Educa 2009 indicates that several countries to the immediate east of the EU (Croatia, Ukraine etc) now have generated a number of initiatives as they settle down after war and economic/political disruption and as their economies and cultures converge with the EU. This has now been confirmed with the publication of the Demiray Reports.¹²

Note that the overview above goes quite a long way towards covering the second topic raised by the HEFCE Task Force: “The international market for online learning, focusing on UK HE’s competitors, and considering how the UK may be able to attract a greater number of students”.¹³

Drivers for ICT in learning

Although it was not the prime focus of Re.ViCa, a considerable amount of material on pedagogical, technical and business factors was collected along the way. The following conclusions are tentative and would need a further study to substantiate beyond doubt.

Prime “business” drivers seem to be the following:

1. Government desire to provide higher education to a higher percentage of the population, often to disadvantaged groups and usually with a subtext of lower cost than conventional provision¹⁴

¹¹ See http://www.virtualcampuses.eu/index.php/National_initiative

¹² See http://works.bepress.com/ugur_demiray/7/

¹³ See <http://www.hefce.ac.uk/learning/enhance/taskforce/> under “Areas of Work”.

¹⁴ Explicit subtext at the recent UNESCO HE conference.

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2. Student desire for greater convenience of study, shorter study transit (e.g. a 4-year degree in 3 years) and a more internationally tradable qualification (often seen as coming from outside the country), leading to a desire for pure distance learning or distance-dominated blended learning – rather than e-enhanced learning on campus.

Desire of staff for enhanced learning and desire of students to study in “digital native” mode do not seem to feature very strongly.

Pedagogy and technology

A number of insights on this come from the November 2009 Educause conference in Denver (Colorado) as well as analysis of Re.ViCa material and liaison with US agencies (Sloan, WCET, Campus Computing Survey, etc).

Despite some UK disenchantment with VLEs, most institutions across the world seem comfortable with the VLE concept, but there is an increasing amount of “churn”, especially movement from the established supplier (principally Blackboard in many countries) towards seemingly cheaper, free or more flexible/sophisticated offerings (Desire2Learn, Moodle and Sakai in particular).

Many technological issues that the UK still finds quite challenging are routinised in some other countries (principally but not only the US) – in particular wireless access and lecturecasting.

There is little operational large-scale use of sophisticated (web 2.0) technologies such as blogs or wikis. Podcasting is used extensively, but in lecturecasting and iTunesU modes, rather than for more sophisticated uses such as assignment feedback or alternatives to essays – in fact the level of pedagogic analysis around podcasting (as represented at Educause) seems behind what is common in UK circles such as the PPP SIG.¹⁵

In general terms, the style of pedagogy seen at many providers is typical of what used to be called (in the early 2000s in the UK) the “tacit pedagogic consensus” or “conservative constructivism” – a mix of content (usually from a VLE) and collaboration (usually facilitated from within the VLE or an external bulletin board system) – in other words what has been seen from the early 1990s in online offerings from the Open University and from many new universities from the “virtual campus” era of late 1990s.

Further Education

Further education is the “Cinderella” within the post-secondary universe. Its definition is unclear in any direction (on all its boundaries: with schools, universities and the training world) – see in particular the masterly analysis by Moodie (2008). International agencies tend not to study it and when they do, few reports are in English or strongly focussed on ICT aspects. National experts from this domain travel far less to international conferences and their English language skills are usually

¹⁵ See http://ppp.chester.ac.uk/index.php?title=Main_Page. Note that the PPP SIG contains FE members including on its Steering Committee.

less than their more internationally-aware university colleagues. (Thus events such as LATWF¹⁶ are very useful.)

However, it was in scope for Re.ViCa, but although roughly equal effort may have been put into it, far fewer results came out, for the reasons above. Nevertheless, some interesting exemplars were discovered, in addition to the many US community colleges who make thoroughgoing use of ICT in learning.

A search on the Re.ViCa wiki yields 20 institutional titles using the word “college”.¹⁷ In addition the category Colleges has 50 members, some overlapping with the first group.¹⁸ Below we give some examples of the scale of ICT in learning in the non-UK FE sector. Particularly in the US, there are many colleges with substantial capability in e-learning; other countries which are very active include Canada, Australia and New Zealand. A recent benchmark exercise in New Zealand has demonstrated ICT capability in many FE colleges at similar levels to those in universities.¹⁹

Examples in US and Canada

This is only a tiny fraction of what is available.

1. Coastline Community College has created an open source course management system (CMS) called Seaport which is similar to Blackboard. Its Military Outreach programme delivers courses to every branch of the U.S. Armed Services. It even offers a complete degree available through content designed for distribution via a Pocket PC or other mobile learning device (cell phone, iPod, etc.)²⁰
2. Colorado Community Colleges Online (CCCOonline) is a US consortium of 13 two-year colleges in the Colorado Community College system, Dawson Community College of Montana, Northwest Missouri State University, and Pickens Tech of Denver, Colorado. It supports online education via Blackboard, Moodle and other technologies. Through its partner colleges it offers Associate Degrees and Certificates in various disciplines. Partner Colleges continue to offer online courses independently, some with great success (e.g. Front Range Community College). Classes are not self-paced, but rather rely on instructor feedback, assignments and scheduling. Classes are accredited and transferable to any other Colorado State colleges (two year or four). CCCOnline provides technical support, but the “home college” provides other student services. A recent report estimates 25,000 enrolments, with a headcount of approximately 20,000.²¹
3. Georgia Virtual Tech (GVTC) is an electronic clearinghouse for all Web-based instruction offered through the Georgia Technical College System (GTCS) of 33 technical colleges. It offers students a centralised portal through which to access programmes and courses. It is

¹⁶ The World Forum was held again in January 2010 – see <http://www.latwf.org>. The delegate list was analysed in early January and one of the Sero-related workshops (CRISSSCEL) was designed to attract FE analysts.

¹⁷ See <http://www.virtualcampuses.eu/index.php/Special:Search?search=college&fulltext=Search>

¹⁸ See <http://www.virtualcampuses.eu/index.php/Category:Colleges>

¹⁹ Presentation from Stephen Marshall at Online Educa 2009.

²⁰ See http://www.virtualcampuses.eu/index.php/Coastline_Community_College

²¹ See http://www.virtualcampuses.eu/index.php/Colorado_Community_Colleges_Online

charged with providing the residents and corporations of the state with a technologically advanced system of technical education in order to boost the state's economic development. Established in 1998, it was designed specifically to improve access for working adults seeking the opportunity to pursue continuing education. Benefits to the state include a decreased strain on existing college facilities and improved access to education from rural areas. By 2005, over 37,000 students were enrolled in almost 6,000 courses (these came from 28 US states and 22 foreign countries). It has an open enrolment policy. Courses include diplomas, job-oriented technical certificates, and associate degrees. It offers courses in both online and hybrid modes. In August 2008, it selected the ANGEL Learning Management Suite (LMS) for all future online course delivery.²²

4. Corinthian Colleges, Inc (CCi) offers training courses and degrees that are focussed on the job-oriented needs of non-traditional students in the US. Since 1999, it has offered online learning opportunities. It is one of the largest for-profit, post-secondary education companies in North America, with more than 72,000 students at over 100 campuses in the US and Canada. A publicly traded corporation in the US, it has acquired numerous American colleges and institutes (more than 75 to date) and re-branded them as part of a larger for-profit network.
5. BCCampus was created by the provincial government in British Columbia, Canada, as a "collaborative online learning initiative... to assist public post-secondary institutions in British Columbia to meet their students' online learning needs. It is a co-ordinating service for all educational online programmes, providing funding to institutions for the development of e-learning materials, training and support services to the smaller colleges, and a one-stop portal for students for online programmes. It serves the entire public post-secondary system in British Columbia, including students, educators, and institutions by identifying, acquiring, developing, and implementing technologies and services that enhance online learning such as a flexible learning for trades training strategy (E-PPRENTICE) and build on established student services such as an online application service (PASBC). It also administers an online program development fund (OPDF), explores and develops shared services, facilitates the dissemination of best practice knowledge, provides professional development and training, and manages a repository of shareable online instructional resources and tools for educators."²³

Rest of the world outside Europe

Interestingly both our two examples are from New Zealand.

1. The Universal College of Learning (UCOL), New Zealand, supports a variety of online learning courses (among other learning options). It has retained a focus on core vocational programmes, although it also delivers Foundation and Certificate programmes, Diplomas, Degrees and some Post-Graduate options (as well as community-based programmes). Over the last decade, UCOL has been sponsoring the development of flexible delivery across the entire portfolio of its programmes. Since 1997, e-learning has been an important part of this

²² See http://www.virtualcampuses.eu/index.php/Georgia_Virtual_Technical_College

²³ See <http://www.virtualcampuses.eu/index.php/BCCampus>

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initiative and has been applied in a range of ways from on-line support to a resource for use in face-to-face delivery. By blending the best of face-to-face delivery with these information and communication tools, it aims to build more effective learning opportunities for a wider range of students.²⁴

2. Open Polytechnic, New Zealand, is a specialist institution of distance learning. It has just over 34,000 students, equating to around 7,000 equivalent full time students. There are rather more women than men students (57:43), and around 13% of students declare themselves to be of Maori ethnicity. Although it offers many degree courses it also offers many lower-level certificates and trade qualifications.

Europe outside UK

1. Hibernia College, Ireland, is an international provider of online programmes at undergraduate and graduate level. It is accredited by the Irish qualifications awarding body for third-level educational and training institutions outside the (public) university sector, HETAC. It provides all of its courses with a substantial online component, using state of the art technology for both synchronous and asynchronous course delivery. One programme, iTeach for teacher training, is offered in the UK, now through five universities. It offers a blended learning format that combines the many advantages of interactive, multimedia-rich online content with the proven qualities of face-to-face tuition through periodic on-site sessions.²⁵
2. NKI Distance Education is the leading distance education institution in Norway and claims to be the largest distance education institution in Northern Europe. It was one of the first institutions world-wide to offer online education when it in 1987 launched its first online distance learning courses. It offers over 450 courses and study programmes at secondary and undergraduate level, as well as specialized vocational training courses in various fields. It employs some 60 full-time and 250 part-time tutors. Each year, NKI Distance Education has around 20,000 active students.

Drivers for ICT in learning

These seem similar to those for universities. Note that in the US, the sectors interpenetrate.

Pedagogy and technology

The issues seem similar to those for universities.

Schools

It is not clear that one can pick out particular schools on a *global* basis. However, certain *types* of school can be flagged. Key categories of these are Virtual Schools and Variant Schools.

²⁴ See http://www.virtualcampuses.eu/index.php/Universal_College_of_Learning

²⁵ See http://www.virtualcampuses.eu/index.php/Hibernia_College

Virtual Schools

In its purest form, a *virtual school* (sometimes called a *cyberschool*) is an institution that teaches courses entirely or primarily through online methods. There is in some cases a link with homeschooling but some homeschooling families do not like virtual schools any more than they like physical schools.²⁶

Unlike in the UK and most of Europe where virtual schools are an eccentricity or occasional experiment, there are many virtual schools in the US. Even in 2001, at least 14 states had a planned or operational state-sanctioned, state-level virtual school in place (Clark 2001). Other types of virtual school organizations include: university-based virtual schools; virtual school consortia; virtual schools operated by schools and districts; virtual charter schools operated by state-chartered entities; and virtual schools operated by private school entities.

In 2009, the “Virtual Schools Symposium” brought together almost 1,600 representatives from national, state, district, private and other virtual school programmes.²⁷

A recent list²⁸ indicates that over 20 states now have virtual schools either public or in receipt of public subsidy – and many of these states have several virtual schools each.

Despite their history, virtual schools are not trapped by the past. As early as 2006, one of their associations produced a report on 21st century skills (NACOL 2006).

A group of Sero staff and colleagues visited a virtual school in Colorado in November 2009 – the Colorado Virtual Academy. A visit report on that is not yet available – but meanwhile below is a mini case study of a similar organisation taken from the Re.ViCa wiki.

Open High School of Utah

The Open High School of Utah (OHSU) provides Utah students with an education through an online, virtual environment that will help them achieve their full academic and social potential. It is committed to using open educational resources. It offers a full college preparatory programme and the opportunity for students to earn both a high school diploma and an associate’s degree from Utah State University.²⁹

Open High School of Utah is a publicly-funded high school, so there is no tuition cost to attend. As with any public school, there may be incidental fees as allowed by state law. Students can expect any such fees to be comparable to their local high school, including the opportunity to have the fees waived.

As a Utah public school, any 9th grade high school student (13 to 15 years of age) in the state of Utah can apply to enrol in the grade they would attend at any other high school in the state. OHSU

²⁶ For an interesting hybrid model see <http://www.connectionsacademy.com/about/about-us.aspx>

²⁷ See <http://www.virtualschoolsymposium.org>

²⁸ See <http://distancelearn.about.com/od/onlinepublicschools/a/OnlinePS.htm>

²⁹ This is why it was flagged by Re.ViCa.

opened for 9th grade in fall 2009 with a quota of 125 students in the 2009-2010 school year. OHSU will add 10th grade in 2010, 11th grade in 2011, and 12th grade in 2012.

If there is a course that students would like to take that the Open High School of Utah doesn't yet offer, enrolled OHSU students can take advantage of the OHSU partnership with Brigham Young University Independent Study (in the Utah Higher Education Consortium) to take BYU independent courses at no cost. There are over 200 such courses

OHSU utilizes cutting edge multimedia technologies and diverse educational approaches and methods including but not limited to service-oriented learning and inter-disciplinary project-based learning. All students are issued/provided a laptop and an internet connection subsidy, along with CDs/DVDs and other instructional supplies. In collaboration with the teachers, students pace their own learning. OHSU utilizes both synchronous and asynchronous types of communication. Synchronous tools enable live interactions and immediate feedback, and give a sense of belonging to a group. For each course, students have the opportunity for synchronous instruction with their teacher each scheduled day of class. In addition, asynchronous modes of communication allow students to access instructional materials any time of the day.

Variant Schools

A *variant school* is a state school that in some (non-ICT) way – governance, school hours, school terms, etc – differs from the norm. The standard English example is the Academy programme.³⁰

A good example in the US is the Charter School movement. Charter schools describe themselves as “innovative public schools providing choices for families and greater accountability for results”.³¹ Many of the virtual schools – like the Open High School of Utah – are charter schools.

Another subspecies of Charter Schools are the KIPP schools. These describe themselves as “a national network of free, open-enrolment, college-preparatory public [i.e. state] schools with a track record of preparing students in underserved communities for success in college and in life. There are currently 82 KIPP schools in 19 states and the District of Columbia serving around 20,000 students.”³² Typically the school day is longer and the school term is longer than at conventional state schools.

Sweden has a similar scheme of “Kunskapsskolan”. The movement was founded in 1999 and runs 30 schools in Sweden – 20 secondary schools (ages 12-15), 1 school for special needs and 9 upper secondary schools (ages 16-19). All the schools are state-funded, free of charge and non-selective. There is now a UK web site for these.³³

³⁰ See http://www.standards.dfes.gov.uk/academies/setting_up/?version=1

³¹ See http://www.uscharterschools.org/pub/uscs_docs/index.htm – upper right of the page.

³² See <http://www.kipp.org>

³³ See <http://www.kunskapsskolan.co.uk>

An open research question is the extent to which an “unconventional” format for school study time, governance etc may in fact be *required* for success in use of ICT for learning – or, to the contrary, whether such approaches may *reduce* the need for ICT (in the school).

The debate here mirrors the intense debates within Re.ViCa about the role of the private sector (non-profit foundations as well as for-profit companies) in facilitating innovation in ICT in universities.³⁴

Pedagogy and technology

No particularly innovative solutions have so far been noticed in the virtual schools – just “conventional” ICT, but deployed consistently and in a routinised large-scale fashion.

The Claims and the international information on them

We report below on the progress made on defining and conducting the probe for each of the ten claims, for the international aspects.

Claim 1: Learning can be connected across formal and informal settings through mobile technology

So far nothing significantly different from the UK has been found across a wide range of the more advanced countries.

In Europe this is because of the extensive range of EU-funded projects in the area. There is some evidence (Nielsen 2009) that the US is behind the curve, for social and technical reasons, but other evidence indicates that the US is catching up fast.

Liaison is being maintained with the “Kaleidoscope” Network of Excellence, and now with *STELLAR*,³⁵ in order to track this area.

The use of mobile technology is seen as valuable in that it offers a 360 degree approach to learning which can deliver in-context learning on demand (“anytime, anywhere”). Using mobile devices as a platform for providing access to ‘ambient learning’ was the aim of the European MOBIlearn project³⁶ but the majority of initiatives seem to stop short of providing a bridge between informal (as in personal) and formal learning – In schools this is mainly due to parental and educator concerns over the appropriateness of the tools (especially mobile phones). There is an opportunity for schools to teach mobile literacy and validate the use of mobiles in informal settings if this were to change. Even among advocates of mobile learning there are concerns around differing levels of access to handheld technology features (i.e. not every mobile phone has a video camera facility) which would need

³⁴ In this context the recent reorganisation of universities in Finland and France is significant. See “Finns, they are a-changin’” in the Times Higher of 10 December 2009, at <http://www.timeshighereducation.co.uk/story.asp?sectioncode=26&storycode=409455&c=2>

³⁵ See <http://www.stellarnet.eu>

³⁶ MOBIlearn Consortium (2005)

addressing if schools did start to see children's own phones/devices as a tool for bridging formal and informal learning environments.

Around the world, digital and mobile technologies are rapidly changing the way young people learn, showcase their knowledge, and share their ideas outside the classroom. Still, few students have the chance to apply these skills to their classroom learning. As Pearson Foundation's Mark Nieker has observed through his work with the Mobile Learning Institute (see Appendix A, p.42), "Children are experts at using these devices – they love using these devices – but in most cases none of that expertise or engagement currently has currency inside the classroom." (p21)

As usual, adults have not yet caught up to the kids. The bulk of public sentiment surrounding mobile devices and learning today is largely unenthusiastic, with many educators and parents concerned that they can cause distraction and other harmful behaviours.

US

The US see themselves as behind the rest of the world in terms of their research into the benefits and their attitudes (which are largely shared by teachers and parents) to the appropriateness of using mobile devices within the classroom (ref: pockets of potential report). This is manifest in the wide-scale banning of mobile phones within the classroom³⁷. and in the lack of any sustained model initiatives. There is a recognition that mobile technologies are rapidly changing the way young people learn, showcase their knowledge, and share their ideas outside the classroom. Still, few students have the chance to apply these skills to their classroom learning." There are mobile learning interventions in the US that target the parents and encourage them to engage with their children's learning via text messages that provide prompts for "everyday literacy activities" in non-school environments e.g. while out shopping – for example PBS Kids Ready to Learn.³⁸ There was a large-scale initiative launched in New York in which provided mobile phones as part of a programme to increase student motivation (the Million phones project) but the project failed to secure long-term funding and closed in 2008.

Source material (from the US 'Pockets of Potential' report) observes:

Our experts were disappointed by the lack of well-financed, coherent, or highly visible efforts in mobile learning in the U.S., compared to our economic competitors, especially in Europe and Asia. Education leaders, perhaps sensing limited public or policy support, have not yet developed a strategy on how mobile learning should be deployed, or even if it should be used at all. Model initiatives are fragmented and lack resources to scale up. While notable efforts have spawned innovative "pockets" of mobile learning, multisector leadership is needed to connect disparate efforts in educational research, industry, teacher professional development, and policy-making. [p5]

³⁷ Schachter (2009)

³⁸ See <http://www.wlrn.org/readytolarn/>

The University of Michigan's Elliot Soloway argues that "for kids, the issue of multimodal input and multimodal self-expression is paramount."³⁹ but also makes it clear that the phones used in their studies are modified so that their key function as a phone is disabled "This isn't a phone. It's a computer."⁴⁰ The Center for Children & Technology regards the Nintendo DS a "pocket-sized laboratory" which is "well-suited for in-class collaboration, language support, observation recording, and creative "project-based" learning"⁴¹.

The US is significantly behind other countries in providing a supportive R&D infrastructure for exploring the use of mobile technologies to advance children's learning.

The discussion with the GROE⁴² team (mainly US-based) at the Brighton meeting in the summer neither confirmed nor denied the views above – the US thinkers were up with the latest ideas, but that is not the same as deployment.

Singapore

The potential of mobile devices as a tool to connect formal and informal learning is recognised in the work of Nanyang Technological University⁴³ – they refer to "seamless learning" where the "priority in mobile learning is to enable students to learn whenever they are curious, switching between formal and informal contexts". There is currently a research project which gives handheld devices to 3rd graders for them to use freely outside of school (So 2009).

In Singapore, for example, the priority in mobile learning is to enable students to learn whenever they are curious, switching between formal and informal contexts in what they refer to as "seamless learning.

Chee-Kit Looi and his team at Nanyang Technological University are working on a research project that gives handheld devices to third-grade students to see how they would use them outside the classroom" (p18)

Other countries

In other countries a strong focus of mobile learning initiatives is linked to the increasing ubiquity of devices among learners and the potential of mobile devices as a platform for delivering distance learning programmes to rural/undeveloped areas.

In **India** the MILLEE project has been running since 2004 and provides mobile phones to school children to play language games on: "These devices are a perfect vehicle for new kinds of out-of-school language learning, which can occur at places and times that are more convenient than school.

³⁹ Shuler (2009b)

⁴⁰ Schachter (2009)

⁴¹ Shuler (2009b)

⁴² See <http://www.cra.org/ccc/groe.php>

⁴³ See <http://www.virtualcampuses.eu/index.php/Nanyang>

These factors create an extraordinary opportunity for complementing the formal educational system⁴⁴.

The M4Lit project aimed to capitalise on the high penetration of mobile phones within **South Africa** (up to 90% among teens) to explore whether releasing a serialised 'm-novel' to teenagers could have a positive impact on literacy levels.⁴⁵ However, there has been dissention among experts on ICT in schools in Africa from the techno-determinist views expressed by Traxler et al on the relevance of mobile to African schools.

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⁴⁴ See <http://www.millee.org>

⁴⁵ Conradie (2009)

Claim 2: School development of innovative, relevant, engaging and creative curricula can be enhanced by responsive and flexible technical support services

(Schools only – the focus is on the FITS framework)

There is no international evidence that we are aware of that would challenge this claim. It is also supported by benchmarking and critical success factors work from FE and HE, in the UK and beyond.

If case studies were needed, there is evidence that there is useful information in **Australia** and certain **Canadian** provinces (e.g. Ontario).

Our US visit and subsequent analyses suggest that virtual high schools in the US would also yield useful case studies.

Claim 3: Conversations between children and parents/carers about learning can be enhanced through Internet connections between home and school

The provision of internet connection between home and school and interventions aimed at giving learners greater access to computers in the home is not given the same level of attention in other countries as it currently is in England. The international picture seems to be more focused around increasing parental participation in their children's schooling through their *physical* attendance at school (e.g. teacher-parent conferences) or using other tools such as mobile phone or email alerts as a route to opening up conversations between the schools and the parents.

As in the UK, parental participation and encouraging them to talk to their children about their learning is widely seen as beneficial, but the focus is more around providing offline/non-internet prompts such as homework assignments that include family members in the learning e.g. film making assignments, mobile phone interventions and offline worksheets which are sent home with the learners.

US

There is a long tradition of "homework help lines" in the US and it is expected that in some areas, as with virtual schools, US experience will be more developed than in the UK.

The US has a strong focus on 'home access' but in many cases this is more about providing equality of access to learning opportunities, usually through homeschooling or through school provision of additional programmes of study via distance learning (the "virtual schools" movement). A key driver for this equality of access is the *No Child Left Behind* legislation⁴⁶ (US Department of Education 2004) which gives rights re: parental choice (particularly re: underperforming schools). In this context technology is providing a route to additional subjects and supplemental tutoring but this is usually

⁴⁶ For an overview see <http://www.ed.gov/nclb/overview/intro/4pillars.html>

through a distance learning lab at the school⁴⁷ rather than in the home. In other cases the homeschooling vendors within the US look to involve parents in online learning at home as “personal, face-to-face learning coaches” – e.g. the US Connections Academy⁴⁸ – but this is obviously a very different model to the (current) UK school system.

Home access is seen as a key influence on whether and how students integrate ICT into their learning in school but there is a concern that focusing on home access “may well widen educational inequality rather than narrow it” (Mumtaz 2001) because of the ‘home advantage’ that middle class learners have. There are also concerns raised that other demographic indicators such as race⁴⁹ and gender⁵⁰ could place some groups at a disadvantage when it comes to accessing the internet at home. Widespread lack of equality in home internet access is likely to be a serious inhibitor of home access schemes until the required investment in the technological infrastructure have been made at a national level. Kawachi concluded (in Volume II of Demiray 2010) that “In many regions (and in some cases whole countries), there is inadequate infrastructure and such poverty that students cannot afford to have internet access at home. Even in the most advanced Western countries broadband is not universal [...]”. In some cases opening up access to online learning outside of the school is more about providing access to learning *within the community* rather than inside the home. “Governments are encouraging schools to establish learning networks in which students and teachers link more closely to their local neighbourhood communities, and also to virtual communities globally” (Blackmore et al 2003). This is seen as being particularly important for minority groups or where a learner’s family does not speak the native language (esp. for US and Australia – and developments in Sweden too) “programs for indigenous [students] are community based, involving parents and elders.” (Blackmore et al 2003)

The focus on offline interventions (through phone services such as ParentLink⁵¹ in the US) to increase parental participation comes from the belief that providing home internet access alone is not enough, particularly for lower social groups – home access interventions need to have an understanding of a student’s ‘personal learning ecology’⁵², including their parents’ level of digital literacy and home circumstances; need to link home use and computer habits to the work done in schools and vice versa.

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⁴⁸ See <http://www.connectionsacademy.com/about/about-us.aspx>

⁴⁹ See <http://www.childtrendsdatbank.org/indicators/69HomeComputerUse.cfm>

⁵⁰ OECD (2006)

⁵¹ See <http://www.parentlink.net/html/ContentBase/Content/Products/ParentLink>

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Claim 4: Radical innovative approaches to learning and teaching can be supported by redesign of learning spaces which incorporate new technologies to help learners develop the skills, knowledge and expertise necessary in an ever-changing world

There is research which points to the role of technology within learning spaces in encouraging/enabling social interaction and group discussion and other skills seen as essential in today's world. The "full integration of ICT into technology rich classrooms changed the nature of teaching and learning, created more independent and self motivating learners, encouraged the use of multiple teaching methods, and encouraged team oriented inquiry."⁵³ Oblinger (2004) argues that the "convergence of technology, pedagogy, and space can lead to exciting new models of campus interaction" which are centred on the learning, and the learners, and also are adaptable to any future changes in both the curriculum and the technology.⁵⁴

Key sites of activity are in **Australia** and the **US**. The 'Learning Lab' spaces being rolled out at Melbourne University have new technologies embedded into the space in a way that enables students to share their learning and collaborate. In these spaces the furniture and technology are

⁵³ Blackmore et al (2003)

⁵⁴ Oblinger (2005)

designed to work flexibly so that the focus can switch between students and the teacher as necessary.⁵⁵

There is an interesting case of the Shibuya University Network⁵⁶ in **Japan** which stretches the concept of learning space to include the whole city. This enables the university to use whatever space is most appropriate to the curriculum. The model has collaborative community-based lifelong learning at its heart and removes the need for capital investment in learning spaces but it is unclear what the role of technology is in this model.

There are questions of how definitively these technology rich learning space have been/can be evaluated. In **Australia** the University of Queensland developed the Pedagogy- Space-Technology (PST) framework to evaluate learning spaces⁵⁷ but there still appears to be a lack of a widely used firm evidence-base.

On the flipside there is an argument that teacher confidence and their approach to teaching is an important factor in their perception of success of learning space innovations within the school and pre-school environment – “student oriented” vs. “direct transmission”. The OECD TALIS study compared responses across 23 countries and concluded that teachers with a student-oriented approach were more likely to have a positive experience of the classroom climate (interestingly, there is no mention of the role of technology in those classrooms).⁵⁸ They also found that: “In the classroom, teachers in all countries put greater emphasis on ensuring that learning is well structured than on student-oriented activities which give them more autonomy. Both of these teaching practices are emphasised more than enhanced learning activities such as project work. This pattern is true in every country.” (OECD 2009)

There is a Building Schools for the Future programme planned in **Germany** but it is not yet in operation.

The **Portuguese** government is investing 2.45 billion Euros in the modernisation of 332 of its secondary schools by 2015. One of the key aims of the programme is to meet the needs of “curricular developments towards much greater use of ICT and more personalised and laboratory-based teaching methods”⁵⁹. The OECD evaluation of the programme to date has highlighted that consultation at a local level have been well handled to ensure that learning and teaching requirements are taken into account but that key national stakeholders should be more closely consulted to ensure that national strategies are also met (which would potentially drive forward greater innovation).

⁵⁵ Jamieson (2008)

⁵⁶ See for example *A new style of lifelong learning in Shibuya* at <http://www.hu.emb-japan.go.jp/download/JVT/JVT%202007.11en.DOC>

⁵⁷ See <http://www.altc.edu.au/march2009-innovation-learning-space-design-evaluation>

⁵⁸ OECD (2009)

⁵⁹ Almeida et al (2009)

Many continental universities are very crowded and with old-fashioned buildings so examples may be sparse. Recent observation in **Sweden** (October 2009) and **Finland** (in previous years) suggests that much informal study takes place round lecture rooms rather than in specific library locations.

In sunnier climates than the UK (**Mexico**, southern US) much ICT-enabled pedagogy (and reading of books) takes place outdoors – in places more crowded or less safety-conscious (Hong Kong) it takes place in cafes and refectories (complete with trailing power cables). The so-called obsolete paradigm, so well known in the US and UK, of large computer labs in serried rows is by no means extinct, and lives on also in Asian countries (**Thailand, China**).

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Claim 5: Learners in all sectors can benefit from new forms of technology-enabled assessment

The use of e-assessment has been gathering pace world-wide, focussing on the countries with reasonably developed ICT infrastructure.

Various reports and assessment bodies show that the prevalent form of assessment is summative rather than formative not only in the UK but in general. According to Kozma (2009,p.15) ‘a recent international survey of teachers in 23 countries in North America, Europe, Asia, Latin America, and

International issues

Africa (Law, Pelgrum, & Plomp, 2008) found that the three most common pedagogical practices were having students fill out worksheets, work at the same pace and sequence, and answer tests. ICT was rarely used and the applications used most often were general office software, followed by tutorial or drill and practice software.'

The extensively discussed and influential PISA report (OECD Programme for International Student Assessment) in its 2006 cycle provides useful insights on the state of technology-based assessment in participating countries. There is an awareness that future initiatives should provide more and more space for formative types of assessment. A very useful source of reference is the event on the "The Transition to Computer-Based Assessment – Lessons learned from the PISA 2006 Computer Based Assessment of Science (CBAS) and implications for large scale testing held in Reykjavik, Iceland from September 29th to 1st October 2008.

Scheuermann and Bjornsson (2009, p.3) conclude that in the upcoming investigations 'PISA will seek to deepen the use of computer-based assessments, to allow for a wider range of dynamic and interactive tasks and to explore more efficient ways of carrying out the main tests of student knowledge and skills in reading, mathematics and science'. Maths and science have gained special focus in every country in line with the attempts to increase competitive base of different world regions in the future. Still, it is difficult to place the whole of continental Europe under one umbrella since different countries are at different stages of computer testing and assessment development. Furthermore, they have had different experience in the implementation of the ICT-led assessment. All in all, judging from the report by Scheuermann and Bjornsson (2009, pp. 6,7), computer assessment rhetoric is focused on the concepts of 'skill and competences' formation in compliance with the dominant discourse of Lifelong Learning, including the emerging concern with 21st century skills agenda. The authors conclude the intention to move completely to Computer-based Testing (CBT) by the year 2015 and there are still a lot of open questions to be discussed'.

US

The US is still at the forefront of ICT application for assessment purposes and it is high-stake automated assessment, with numerous examples including:

- 'Measures of Academic Progress' – a battery of CATs that are used for K-12 assessments in reading, mathematics, and language usage in over 3.400 school districts
- Graduate Management Admissions Test – a CAT used as part of the admissions process for graduate management in the US and in English-speaking programs abroad
- Graduate Record Examination-General Test (GRE CAT) – a CAT used as part of the admissions process to a variety of postgraduate programmes at the masters and doctoral levels
- The Praxis Series: Teacher Licensure and Certification, Praxis I, Pre-Professional Skills Test – linear CBT testing basic skills in reading, writing, and mathematics).

Europe (not UK)

Continental Europe is in the stage of transition when it comes to both summative and formative use of ICT for assessment compared to the UK, US, a large part of Asia, Canada, Australia and New Zealand. However, different countries are at different stage of the relevant practice development, thus they cannot be precisely placed under one umbrella. There are many records of initiatives taken

across European countries when it comes to technology-based assessment practices, statistics and future action points. The highest number of them are orchestrated and funded by the European Commission. For example, the following examples state some of the ongoing initiatives :

- The Joint Research Centre of the European Commission⁶⁰ in Ispra, Italy, is supporting the DG Education and Culture in the preparation of future surveys
- The Centre for Research on Lifelong Learning (CRELL)⁶¹ at the JRC is carrying out a research project on modes and platforms for computer-based testing and to analyse effectiveness of software implementations for large-scale surveys.
- The new Danish National Test⁶² is an interesting example of explaining the reasons and potential benefits in the context of challenges identified with its introduction

From summative towards formative assessment

When dealing with ICT assessment, an important issue is defining the PURPOSE of assessment and testing. In that respect, Black and William (2007) propose three purposes:

1. Assessment for Learning
2. Assessment for Certification (reporting the achievements of individuals) and
3. Assessment for public accountability (Black and William, 2007, p.4)

Formative assessment first and foremost attends to the first and rather important purpose: assessment for learning. Summative assessment has its advantages but a combination of the two leads to greater educational and pedagogical benefits.

Formative assessment is:

- interactive and adaptive
- uses variety of inputs
- promotes active involvement of students
- central to teacher's instruction and focused on teacher's feedback (ibid.)

Any ICT assessment software for formative assessment should follow those guidelines since this can be a rather strong support for learning. Linn (1989, p.5) clearly emphasizes the importance of the construction of 'theory of instruction and learning and a much better understanding' of and concern with 'cognitive processes of learners', Merging instruction and testing is required.

In **France** and **Germany**, the results of assessment are not crucial for school performance ranking whereas in Japan and the UK they are. Australia, New Zealand and Sweden place concern on teacher judgement rather than university entry testing (although in Sweden student can opt for aptitude tests). External assessment consolidates the internal one (Black and William, 2007). France also prioritizes the support of teacher profession but sticks to its 'big-bang' assessment (ibid, p.11).

⁶⁰ See <http://crell.jrc.ec.europa.eu>

⁶¹ See <http://crell.jrc.ec.europa.eu>

⁶² See http://crell.jrc.ec.europa.eu/Presentations_Iceland%202008/Wandall.pdf

International issues

There is an emerging concern how to assess 'new constructs' coined in the famous statement of the '21st century skills' such as:

- communication skills
- teamwork,
- critical thinking, and
- creativity
- as well as the constituents of higher order thinking concept.

Innovative moves

- Computer-based assessment methods, such as games, simulations, and reaction time methods, and tests, such as the implicit association test, and situational judgment test seem promising as ways to measure them.
- **Situational judgment testing** in particular is becoming increasingly popular in education as a way to measure a wide variety of new constructs. It is appealing to users as an authentic assessment, it can play a dual role as both an assessment and training method, and it shows less adverse impact against minority groups than other methods. (Kyllonen,2009,p.151)
- **CONCERN:** Low level of usability of ICT-based assessment AND the PREVALENCE OF SUMMATIVE ASSESSMENT. More research needed on possibilities, implementation and impact of formative assessment.
- Laboratory studies (e.g. see Bransford & Schwartz, 1999; Schwartz, Bransford & Sears, 2005) show that new approaches to assessments reveal the strengths of innovative pedagogical approaches.
- The Technological Issues Working Group, led by Dr. Beno Csapo of the University of Szeged is investigating the ways of assessing different 21st century skills. The findings of the research will be a good reference once the project is finished. This group will identify technological problems and specify solutions for scalable ICT-based assessments of 21st century skills.

Challenges

- Teacher-training: for ICT-led assessment programmes, strategies and methods (as well as for pedagogic use and classroom interaction and instruction which is also critical for proper educational implementation of ICT)
- How to measure new constructs and HOT?
- Governments' support in terms of research initiatives and funding (top-down approach)
- Teacher participation and proactive performance (bottom-up approach)

One important issue when it comes to assessing any educational construct regarded as an expected outcome of teaching and learning is **defining** those constructs no matter how widely and extensively, but with a reasonable and desirable level of consent). Then, the tools and methods of measurement can be made compatible to the functionality of the construct. Definitions may vary depending on the discipline.

When it comes to assessing creativity, Villalba (2009) suggests that Richard Florida's book "The rise of the creative class" informs us what creativity encompasses at a societal level (Florida, 2002, Villalba,

2009,p.31). The main premise of Florida's book is that creativity is the "ultimate economic resource" (Florida, 2004, xiii) and that we live in a "Creative Age"(Villalba,p.31).

Challenge: it is hard to measure creativity, at international level almost impossible due to great cultural differences and constraints (that is why defining concepts in the first stage is so important). It is necessary to determine what creativity (or HOT is) before assessing it.

Emerging innovations: Simulation and Game-Based Assessments

Simulation and game-based approach to assessment corresponds to the concept of situational judgement testing.

Through new methods of **simulation**, it is possible (at least partially) to monitor the process that a person follows to arrive to a solution. This would allow testing for creative aspects of the process that are not possible in traditional paper and pencil tests. Also important is the fact that computer-based assessment can be easily presented as a game-like test that seems necessary to properly test creativity (Runco, 2007).

New constructs, such as communication skills, teamwork, leadership, critical thinking, and creativity are increasingly recognized as important in both school and the workplace. Computer-based assessment methods, such as games, simulations, and reaction time methods, and tests, such as the implicit association test, and situational judgment test seem promising as ways to measure them. Situational judgment testing in particular is becoming increasingly popular in education and in industry as a way to measure a wide variety of new constructs. It is appealing to users as an authentic assessment, it can play a dual role as both an assessment and training method, and it shows less adverse impact against minority groups than other methods. (Kyllonen,2009,p.151).

High-profile efforts have been launched to identify the skills needs to succeed in the 21st century. Table 1 compares these efforts. Paramount among them is the work of the **Partnership for 21st Century Skills**.⁶³ The Partnership brought together the business community, education leaders, and policy makers to create a vision of 21st century learning and to identify a set of 21st century skills. Built around core subjects, the skills include learning and innovation skills; information, media, and technology skills; and life career skills. These skills have been adopted by a number of states in the **US**, including Maine, North Carolina, West Virginia, and Wisconsin. "*Transforming Education: Assessing and Teaching 21st Century Skills*" – paper sought to provide an illustrative example of this type of assessment. (Ripley,2009,p.94)

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Claim 6: Students can be motivated to develop the skills they need for the 21st century through new curricula that integrate new-media technology and social learning

Discussion of 21st century skills and the role of technology in developing those skills seems to be focused around skills needed for the workplace (e.g. fostering collaboration, team-work, information literacy etc⁶⁴), particularly at HE level, but much of the research does include broader life skills such as 'citizenship'. The debate is a mature one but there is still a lack of large-scale empirical studies on the impact of new and emerging technologies. The research seems to broadly echo research from the UK which argues that 21st century skills can be taught through 'authentic, well-designed tasks' which are delivered in 'meaningful contexts'.⁶⁵

⁶⁴ AAC&U (n.d.)

⁶⁵ JISC (2009)

The adoption of 'web 2.0' technologies in HE across different countries "appears to be in some measure dependant on the technical infrastructure being available to enable students to access the Web 2.0 functions." Countries such as those in most of Africa have widespread issues regarding adequate broadband access but this is also an issue for students in **Australia** once they are off-campus.⁶⁶ The use of web 2.0 within HE is typically bottom up and ad hoc amongst enthusiasts and they are seen as "unproven technologies" with uncertain benefits and risks associated with implementing them within universities. Where web 2.0 tools have been taken up in HE there is positive feedback in terms of their ability to both meet 21st century pedagogic aims (e.g. collaboration and sharing knowledge with peers) and to motivate students to learn transferable skills that they will need in the modern workplace.⁶⁷

The 2006 European Schoolnet study reported "All the studies reviewed have identified a range of important wider benefits of ICT on learning. These include the positive impact of ICT on students' motivation and skills, independent learning and teamwork. Increased motivation leads to more attention during lessons which can be exploited by the teacher. Aspects for more individualised learning were described in a variety of ways. Students learn more independently, at their own pace and according to their needs. They also take more responsibility for their own learning process."⁶⁸

In the **US** there are national initiatives aimed at school and university levels which include the *Partnership for 21st Century Skills*⁶⁹ and the *Liberal Education and America's Promise (LEAP)*⁷⁰ initiatives respectively. However there has been a reported backlash against the 21st century skills agenda with critics arguing that "Unless states that sign on to the movement ensure that all students are also taught a body of explicit, well-sequenced content, a focus on skills will not help students develop higher-order critical-thinking abilities"⁷¹

The **Australian** study 'Educating the Net Generation' reports that the successful implementation of new technologies within the HE context was reliant on fully integrating a learning activity within the broader curriculum and assessment – students do not respond positively to technology being introduced for the sake of it. Introducing new technologies required students and staff to negotiate new classroom skills (e.g. collaborative working) as well as learning to use the new technology itself.⁷²

There are other examples of countries who are implementing radical strategies such as the one being undertaken by the **Oman** Ministry of Education which aims to build "an education system that equips Omanis with 21st century skills through the increased use of eLearning in schools. With the implementation of an educational portal that provides appropriate and professional interactive content, the Oman MoE will provide students with access to their class work or homework, tools to

⁶⁶ Armstrong & Franklin (2008)

⁶⁷ Armstrong & Franklin (2008), pg 20.

⁶⁸ Balanskat et al (2006)

⁶⁹ <http://www.21stcenturyskills.org/>

⁷⁰ <http://www.aacu.org/leap/index.cfm>

⁷¹ Sawchuck (2009)

⁷² Kennedy et al (2009)

solve problems, and individualized immediate feedback. Learning will become a constructive activity since the students will now depend on themselves to acquire the necessary information.”⁷³

The *FutureSchools@Singapore* programme aims to “provide possible models for the seamless and pervasive integration of infocomm technology that includes interactive digital media. By harnessing infocomm technology in the education sector through innovative pedagogies and flexible learning environments, schools will be able to achieve higher levels of engagement of their students who already have an infocomm-integrated lifestyle. Thus, students will be equipped with the essential skills to be effective workers and citizens in the globalised, digital workplace of the future.”

[We hope to add something around the experience/research in under-developed nations ... what does the term 21st Century skills mean to those nations? – this will build on point A1.1 on this website: <http://www.elearning-africa.com/themes.php>.] There seems to be little differentiation in what is meant by 21st Century Skills in under-developed nations who seem to see these skills as an opportunity to “operate and succeed in the [global] innovation economy”⁷⁴. Technology companies such as Intel⁷⁵, Cisco⁷⁶ and IBM⁷⁷ are very visible in discussions of 21st Century skills within under-developed nations (or “growth markets”/“emerging platforms”) and clearly have a vested interest in raising the levels of technological infrastructure and education in these areas.

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⁷³ Checkpoint eLearning (2009)

⁷⁴ See

<http://www.ngoconnectafrica.org/NGOCONNECTAFRICA/NGOCONNECTAFRICA/Communities/News/IntelMustekLearnthingsAfricaandTVSunriseCollaborate/Default.aspx>

⁷⁵ See <http://www.elearning-africa.com/newsportal/english/news81.php>

⁷⁶ See <http://www.cisco.com/web/about/citizenship/socio-economic/docs/GlobalEdWP.pdf>

⁷⁷ See <http://www.mis-asia.com/news/articles/ibm-eyes-philippines-as-an-innovation-hub>

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Claim 7: Teachers can promote higher order thinking in project work at all levels of education through use of ICT tools for interactive visualisation and simulation

Scope: Both in schools and HE, more advanced developments is found in the US and major space in the claim is given to the innovative moves in that country. However, there are interesting and successful cases in continental Europe as well, mainly through the programmes supported by the OECD and European Commission. It appears that if we exclude UK, the leading educational innovators in Europe are the Nordic countries: Denmark, Finland, Iceland, Norway, and Sweden. One of the latest OECD's publications features those countries as users of digital learning resources as systemic innovation beyond textbooks.

Innovative ways of higher order thinking provision include an appropriate implementation and handling of visual and simulation-based learning tools such as: game-based learning, 3 D simulations and haptic simulations, multimedia and multimodal learning and artefact creation (e.g. digital storytelling with pictures or sound).

The focus of this report has been placed upon game-based learning as a rapidly emerging learning method. At the latest BETT show, the Secondary, FE & Skills Digital Content award was given to Danish company 'Serious Games interactive' that specializes in game-based learning .

Visualisation and multimedia learning – US

Research and application of visual and multimedia learning originated and have been most prominent in the US. Mayer and Moreno (2002) concluded that 'animation' (still or moving images)

and visualisation in learning is beneficial for the provision of deeper learning. The use of animation, games and visual tools in education refers to the cognitive theory of multimodal learning.

SELECTING (selecting different media to match learning requirements), ORGANIZING (organizing the whole process of interaction with the selected media) and INTEGRATING (integrating the media within the curriculum and supporting it by adequate pedagogy) principles can help multimodal learning work. Those are the principles emerging from the work done by a team of researchers at Santa Barbara University, US led by Mayer and Moreno. Those researchers have been focusing their research on visual learning tools (ibid).

Moon (1999) proposes hierarchical steps as to how learning develops through 'visualisation' in his 'map of learning' which can be presented as:

1. Noticing (or simply seeing)
2. Making sense
3. Making meaning – working with the meaning – transferring meanings in different contexts/domains, retelling meanings
4. Transformative learning (creation, challenge, synthesis, moving beyond)

Visualisation and simulation projects – EU

Primary School Level

There have been numerous cases of project across the European Union that incorporate the use of ICT through visualisation and simulation.

For example, Game-Based Learning (GBL) projects within the European community report on game-based learning good practice spread across all levels of education, not only primary. Other projects offer data on beneficial learning practice through games such as The Games in Schools report (<http://games.eun.org>). The project eMapps gathered new EU member states' children for the purposes of computer games and mobile learning in schools. Some projects included the use of VLEs, such as ARGuing which exemplified the use of games for learning on the Moodle Learning Platform. This project focused on implementation of currently prominent learning theories (constructivism, situated learning, cognitive apprenticeship and problem-based learning) in order to secure satisfactory impact on learning. In that respect, it is important to emphasize the necessity of first considering learning methods and pedagogy via learning theories in order to implement ICT visualisation and simulation tools adequately.

In the case of Radiation games project (<http://www.radiationgames.net/>), visualisation is implicit as a learning tool. Drawings, images and virtual reality worlds are used in this project to enhance the understanding of biological structures. Film as a specific type of visual media can be used for learning purposes (http://www.cisci.net/downloads/Contents_CISCI.pdf)

European 6th framework Programme ecircus (<http://www.e-circus.org/>) developed novel conceptual models and innovative technology to support social and emotional learning through role-play and effective engagement. A number of journal articles in psychology, interdisciplinary and

International issues

computer studies (all listed on the official website) is an evidence of project richness and importance for the development of different educational purposes through visualisation and simulation.

Kozma (2003) provides an overview of international classroom projects which are seen to enhance teaching and learning supported by the use of visuals (among other media within ICT technologies), for example in Catalonia, Spain .

Teachers have started using ICT within the context of complex tasks which subsequently will allow students to master the skills needed for the 21st century (OECD, 2001). The future learning demands are envisaged to be: the ability to handle information, solve problems, create, communicate and collaborate (among other 21st century skills).

Secondary (high) school level

In **Denmark**, one of the best cases of a successful use of visualisation and simulation in secondary schools seems to be the case of the company Serious Games interactive. This company (industry) produces Global conflicts series video games specifically targeting history and citizenship education at secondary school level. The company's CEO Simon Egenfeldt-Nielsen investigated the concept of game-based learning in his PhD dissertation. Hence, this example leads towards the conclusion that the successful use of technology might mean bringing together educational research and industry. The games explore global conflicts and complicate issues in different world regions (Palestine, Africa, Bangladesh-upcoming). A video introduction on theoretical perspectives (game-based learning) can be found at company's website: <http://www.globalconflicts.eu/about-series>.

In the **US**, Williams and Meng-Yun (2002) investigated the use of haptic simulation for the purposes of teaching high school physics. As stated by the researchers, the project 'intended to reinforce concepts learned in high school physics by allowing the students to feel the various concepts the teacher presents.' (Williams and Meng-Yun, 2002,p.9).The project goal was to 'increase student learning, retention, and technical curiosity, for the maximum possible audience.'(ibid,p.9).

Higher Education

In the **US**, haptic simulation has emerged to be one of the latest modes of visual and kinaesthetic learning that can provide higher order thinking. Haptics is related to the cutaneous sense of touch in humans. Haptic interfaces provide force and touch feedback from virtual models on the computer to human users (Williams and Meng-Yun, 2003). Haptic simulation is connected to multimodal virtual environments and the synergy of visual, auditory and haptic stimulus aiming to 'convey information in a more naturalistic fashion since the user manipulates and experiences the environment through multiple sensory channels.'(Hamza-Lup and Adams ,2008,p)

Stanford University (<http://vhil.stanford.edu/>) and Berkley University (<http://tele-immersion.citris-uc.org/>) have been noted for a rapid development of haptic simulation.

Many projects are being developed in the US that investigate the use of second life for the purposes of teaching and learning.

The following sites provide data on haptic simulation in the US (HE but also high school and FE):

- www.neuro-pathways.org
- www.3drtt.com
- <http://home.novint.com/>
- <http://www.cs.armstrong.edu/felix/news/>
- <http://cs.armstrong.edu/felix/projects/3DPaC/>

In **Austria**, a successful example of user-centred game based learning in Higher Education is given by Ebner and Holzinger (2007) for the purposes of civil engineering. The minimum learning outcomes with game-based learning were equal to the common/general learning methods. However, a factor of 'joy' was very high. This finding encourages further investigation of the element of 'joy' in learning. Ebner and Holzinger's (2007) experimental findings supported the efficacy of game-based learning for civil engineering students at master level.

The following section focuses on one aspect of visualisation and simulation learning: game-based learning. It closes this claim with game-based learning characteristics and benefits. Game-based learning is seen as field that is expected to take off as a possible way of educational method in the future.

Game-based learning: Why digital games? – benefits and challenges

Egenfeldt-Nielsen (2009) states that there have been more than 30 quantitative studies over the years suggesting that games are useful in classrooms. Buch and Egenfeldt-Nielsen (2006, p.3) report that most students saw an advantage in being able to visualise facts they were just reading about beforehand.

A few authors have written influential books that claim the power of game-based learning (mainly American authors) James Paul Gee's 'What Video Games Have to Teach Us about Learning and Literacy (2003)', Marc Prensky's 'Digital Game-Based Learning (2001)', Clark Aldrich's 'Simulations and the Future of Learning: An Innovative (and Perhaps Revolutionary) Approach to e-Learning (2004)'.

Games are motivating and fun for students. However, having fun and fun factor of games is not something that will provide a miracle in the future of education (Kiili, 2005). On the contrary, as long as the games are perceived only as fun among teachers and students and do not meet learning requirements, both parties that construct the teaching-learning process can face it with doubt and scepticism.

Suggestions for a successful implementation of game-based learning: overcoming challenges

PAT model

Finneran and Zhang (2003) propose a so-called '**PAT model**': '**person(s) – artefact – task**' for successful implementation of game-based learning. They surround their proposal around 'experience flow'. Experience flow in learning occurs when a person interacts with an artefact in a meaningful way through the set task. The idea of experience flow corresponds to Dewey and Bruner's learning theory of 'experiential learning'. However, the focus should not be on individual

engagement but should include human real-time interaction and shared experience. In ICT learning, experience flow is dependent on the interplay between the person(s), the task and the computer. The task is recommended to include other people –teachers and peers for ‘helping’ players move forward (players can play in pairs or teams) and reflect on the game afterwards.

Educational goals

Fun and entertainment that games offer are motivational factors which are important but may decrease after time unless clear educational benefit and purpose of the game is stated, namely understood and accepted by both teachers and students. There is a clear need to integrate educational theories and game design (Kiili, 2005) Merging educational goals and gameplay is required in order to sustain motivation, otherwise games do not succeed (Finneran and Zhang,2003).

Development through human-artefact interaction

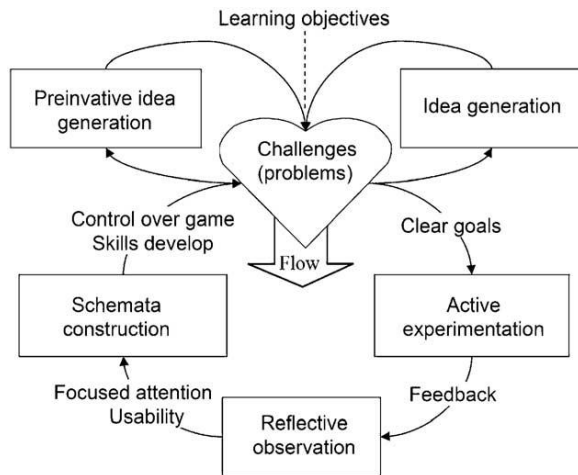
This view of ‘helping’ players is equivalent to Vygotsky’s learning theory, namely ‘the zone of proximal development’ where an extra push from a more knowledgeable person (a peer or a teacher) is needed for the student to cross the boundaries of his/her knowledge during and after the task completion.

Different activities after the game among peers and teachers can further deepen the learning process such as: re-telling the experience to peers and the teacher, pair discussion and debate, writing short evaluative journal entries (e-portfolio or blog) etc.

Challenge, audiovisual inputs and involvement are seen to be the key elements of educational games (Egenfeldt-Nielsen, 2005; Prensky, 2001). It is presumed that a successful educational game is more a matter of collaboration between the experts in the field (teachers and academics) and game designers than a matter of an ill-suited fitting into educational practice (e.g. for ‘practicing’ factual knowledge).If a game designer is an expert in education, so the better as in the case of Danish ‘Serious Games Interactive’.

A model for game-based learning

The following table presents a possible model of an interactive game-based learning process, taken from Kiili (2005). It was developed for HE but is likely to apply more widely, certainly to post-secondary education.



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Claim 8: Capital Funding has acted as a catalyst for authority wide CPD TEL strategies which have led to an increase in the quality and accessibility of teaching staff's CPD in TEL

This is not a Claim where international evidence has any bearing. There seem few overseas analogues of Building Schools for the Future. There is said to be a proposed programme in **Germany** but details in English could not be found. There is minimal evidence of BSF-type programmes in other countries.

The situation is similar for FE and HE. Indeed, normal practice is *not* to link CPD to building plans, even in special situations such as learning centres and computer labs. Training plans are handled by different management at different points in time.

Claim 9: Leadership is a dominant influence in the introduction and use of innovative technologies (Web2.0, IWBs, VLEs) to transform teaching and learning organisations

At schools level many countries take a similar view to the UK.

For example, on a recent visit to an innovative multi-ethnic school in **Sweden**, the key role of both the leader – Rector (head teacher) – and mid-level leader (ICT director) was evident.

Similar conclusions were reported verbally from **Kuwait**, from the opposite standpoint – lack of school leadership has led to poor results in ICT deployment.

In post-secondary education, after intensive discussion and analysis of the literature, an international panel advising the Re.ViCa project has promoted leadership aspects to a key position as one of the 17 “Critical Success Factors” for major e-learning initiatives:

- Leadership in e-Learning: The capability of leaders to make decisions regarding e-learning is fully developed at departmental and institutional level

This covers Deans/Subdeans (departmental) and VCs/DVCs/PVCs/senior Directors (institutional). (Interestingly the criterion evolved from one on decision-making by managers, teams and committees.) Though there appears to be just one criterion on leadership, the hidden hand of leaders shows through in several other criteria such as strategy, planning, management style and relationship management.

The factor “Leadership in E-Learning” was exposed to group discussion (about 30 participants) in the CRISSSCEL session at LATWF in January 2010.⁷⁸ The participants, from all sectors of education, generally agreed that this factor was critical. While this is uncontroversial nowadays in UK HE (though it was not accepted a few years ago especially in research-led institutions), it is gratifying to see wider acceptance.

Claim 10: Practitioners develop more innovative and transformational uses of technology through informal and peer learning than from formal training

This is a complex claim which requires analysis of formal training and informal/peer learning, and then the drawing of comparisons on relative effectiveness.

As with the main (UK) report on this Claim, we cannot deal fully with all the aspects, However, some useful background comes from the **US** and **Australia**.

As expected, the US is leading the professional community of informal learning through the blogosphere, fora, video conferencing and professional chat sites. However, the same use of those informal learning channels has been practiced all over Europe and the world. This analysis focuses

⁷⁸ See <http://www.latwf.org/en-gb/Speakers-and-programme/Programme/Day-2/Day-two-programme/Innovation-exchange-two/Session-8/> and <http://www.virtualcampuses.eu/index.php/CRISSSCEL>

on American resources since there is either a similar or identical use of informal and peer learning in other countries. The following overview is based on the research primarily drawing on the US, noting that it is largely similar to the case of UK, continental Europe, New Zealand, Australia, Canada and Asia.

Informal and peer learning

Anyone, including educational professionals accessing the internet, can be a part of the 'knowledge-access, knowledge-building and information-exchanging culture' (Loving et al., 2007). It is not realistic to characterise informal and peer learning in any singular manner. It can be realised through a number of routes. These routes span across serendipitous communication arising within the course of normal workplace practice, forms of sought interaction that stretch outside of that workplace and which mobilise communication media, such as mobile phones and PCs, access to disciplinary resource sites and structured and non-structured programmes of informal self-study. Any practitioner seeking guidance on innovation may not exclusively focus on just one of these options. The greater part of the communication continuum sketched above is located within the social interaction tools of the internet.

In relation to those various routes to informal learning, blended learning appears as the latest talked-about learning paradigm.

Blended learning

Blended learning is the latest learning paradigm originated in the US (Oravec, 2003). 'Blended learning' aims towards most viable and effective synergy of learning theories and information technology. Formal and informal learning may be linked, creating a type of 'blend' (e.g. in the cases of informal online chats and forums within a formal learning programme or project).

There has been a substantial growth in the number of people expecting to take part in networked communications. The widespread availability and increased use of technology across society has impacted on society's use of social networking sites, which includes an increased use of these sites for informal learning and knowledge sharing. Within this arena, emerging 'communities of practice' do seem to be an important factor in facilitating opportunities for informal learning.

Professional Learning Communities – Communities of Practice

American researcher Morrissey (2000,p.3,4) defines a 'professional learning community' as a group of professionals 'coming together for learning within a supportive, self-created community'. A broader definition of professional learning community involves professionals' knowledge construction and scaffolding through **sharing** values, interests and goals (Harmon and Jones, 2001). In line with those definitions, professional may seek to improve their knowledge using some of the web-supported channels of informal learning where sharing values, interests and goals come into play such as: blogs, wikis, fora, educational professional networks and chats.

It appears that those are particularly developed in the US (and similar to the UK), but are also found in other parts of the world and used in the same manner, e.g. continental Europe, Canada, Asia, New Zealand. The interaction within those informal spaces involves a professional (or a group of professionals) in one field who usually administrates a particular web space and builds up an initial

circle of professionals /peers for information and feedback exchange. Feedback is the most problematic aspect of online communities since threads do not last for long; it is hard to measure the impact of any feedback.

Given the importance that has been recently placed upon blogs, the following subheading focuses on blogs. Blog as such is used in almost identical manner across the world, since it got adopted from the countries stated as 'innovation leaders '(US, Australia, UK, Europe (other than UK): Sweden, Denmark, Germany).

Blogs

Blogs are one of the windows for professional learning and knowledge exchange which are easy to use. They provide a powerful platform for 'personal expression, and dissemination and critique of the internet materials' (Oravec, 2003, p.225).A few recent papers have dealt with the 'phenomenon' of using blogs in a professional learning community. In particular, American researchers led by Loving (Loving et al., 2007) provide information on how this communication vehicle can enhance links among professionals and subsequently foster knowledge sharing, critical reflection and professional growth. Loving et al (2007) refer to the work of other thinkers to support the claim that 'blogging is based on constructivist learning theory', hence its focus is on 'modelling, coaching, scaffolding, articulation, reflection and exploration'.

The principle of peer feedback resonates well with Vygotsky's notion of peer scaffolding in learners' development. For example, blogs alert 'readers to current events that are relevant to professional endeavours taking 'critical and instructional' stance towards various instructional modalities' (Oravec, 2003, p.232). They also build a type of 'community diary' for insights on group projects (ibid.).

Blogging is considered a type of asynchronous electronic communication in comparison to the synchronous one (when ICT is used as a tool for real-time teaching-learning interaction). Schwier & Balbar (2002) argue that asynchronous communities (such as bloggers) allow users more time for higher-order and in-depth knowledge building. The participants are 'writers' who have the time to think about organizing and presenting (ibid.) their written inputs – entries as reflections or responses.

Australia and US

In Australia and US, there are a number of examples where teachers are actual bloggers rather than policy/politics bloggers. Those teachers run blogs or contribute actively to wider social networks. (A list of Australian teacher bloggers is provided in the Appendix). It is presumed that teacher bloggers add to peer networks through sharing their actual teaching experience and issues.

The traffic of the blog visitors of Australian educational blog *The Open classroom* has been rather versatile and big. This is illustrated by the following statistics on the number and the country of origin of the visitors between 19 Jun 2009 to 19 Feb 2010: US-United States: 2,447, AU-Australia: 981, CA-Canada: 152, IN-India:144, GB-United Kingdom:100, PH-Philippines:70, PT-Portugal:51, SG-Singapore:34 and many other countries as numbers decrease. Altogether, there have been 4,456

visits. A traffic for one day included visits from: US, Manila, Brunei, Bucharest, Sweden, Australia and New Zealand.

The role of informal forums, educational networks, chats and blogs in building an online professional learning community

Informal learning spaces (such as forums, educational networks, chats and blogs) are noted to be particularly useful for sharing personal practice which is one of the conditions for successful professional community building (Hord, 1997).

Research evidence

Loving et al. (2007) concluded that web 2.0 can offer useful tools for launching and implementing professional development projects. They investigated the project run in collaboration between Texas A&M University and 11 urban, suburban and rural districts in Greater Houston area, US. This group of researchers investigated PLC-MAP: Professional Learning Community Model for Alternative Pathways in Teaching Science and Mathematics project and provided an evidence of blogging effects for professional learning. They concluded that most of their teachers found blogging beneficial. However, there were some who were frustrated, mainly in connection to the 'time constraints and unclear purpose' (ibid.p.11). 3/4 of the blogs were found to demonstrate 'deep information processing, such as elaboration, justification, creative and critical thinking' (ibid., p. 12).

According to the analysis of blog transcripts, blogs serve two purposes essential for building an online learning community:

1. Conceptual (sharing resources/ideas/reflections on conceptual topics relevant to their profession and professional interests)
2. Affective (personal introduction and description, establishing rapport with peers, channelling satisfaction, success, frustration and doubt)

Web-resources generated by PLC-MAP Project Participants for Middle and High school science and math teachers are provided in the Appendix.

Conclusion

The research findings for the international space are closely in line with the domestic findings on this Claim and do not point at different use of technology for informal/peer learning. Judging from the researched literature and websites, the following benefits, suggestions for successful use and challenges can be concluded

Benefits

The benefits of informal peer learning have been discussed so far throughout the whole Claim 10. There are some additional entries or benefits that can be added on:

- Teachers talk more freely about sensitive issues that they are not so open to express in face-to-face conversations. (Li, 2003)

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- It is a platform for sharing insights for teachers as well as their successful and frustrating experience. (Toner, 2004)
- Enhances critical reflection. (Lankshear & Knobel, 2003)
- The essence of informal learning is that the learner is in control and decides what resources, social networks, blogs, wikis to pursue.
- One of the reasons in favour of informal peer learning might be that formal training is expensive and institutions claim that they cannot “afford it”, so that teachers must find some other way. This works better with university staff who still do have more flexibility and less pressure than teachers (and probably even more so in the US where many examples come from) – and also more of a tradition in working beyond normal hours.

Suggestions for successful use

In order to provide successful informal professional information exchange, the following conditions are to be satisfied:

- Removing technical barriers
- Scaffolding in learning how to participate and what to do (either formal or peer ‘training’)
- Facilitating and scaffolding the discussion (e.g. during blogging communication)
- Provision of:
 - Ownership
 - Shared vision
 - Purposeful communication for participating teachers (Loving et al.,2007)
- Face-to-face and online learning complement each other, on-line learning is not to be taken as dominant mode of informal peer learning (Li, 2003)
- In case of blogs, those are more likely and commonly used as ‘journal’ data base rather than ‘interaction tools’. However, in the future, it is suggested that blog facilitators should emphasise the importance of ‘commenting’.

Challenges

The following set of challenges for the purposes of practitioners’ informal education has emerged:

- Low participation rate (Khine et al., 2003; Kreijns, Kirschner, and Jochems,2002) – encouragement and reminder needed for feedbacks/commenting (Loving et al,2007)
- Low degree of collaboration (ibid.)
- Low information credibility
- Low level of implementation (the connection between informal learning and practice improvement)
- Low level of impact measurability (it is difficult to measure or estimate the impact of an informal learning process .Many readers (visitors) do just that – read and visit without leaving any traces of their visit. Counting the number of ‘visits’ does not reflect the ‘impact’

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on professional practice of the site itself. One possibility is to track a group of users in a type of longitudinal study)

- Life expectancy and characteristics (how long can be an online practitioners' interaction maintained, why is it started and what brings to its 'dying out' or 'flourishing', what are the characteristics of effective online platforms for informal learning).
- There are some topics which are not bloggable, e.g. despite the best efforts benchmarking e-learning into a community activity appear to be too dry, subtle and management-oriented.

There are also a number of theoretical and experimental challenges to the claim, essentially based round the "Chinese whispers" problem – that expertise becomes denatured and distorted when passed from person to person:

- It violates the "World Class" approach from business schools (Rosbeth Moss Kantor et al) where companies who wish to innovate are advised to learn only from the best and then overtake them
- It is contradicted by field experience in ICT for Development, where the problems e.g. in Africa with "regional expats" are widely known.
- Even in the pre-ICT era, it was clear that instructional writing (for distance learning) was best taught, not absorbed – and especially not absorbed from non-experts.
- Many new technologies contain subtleties which many new users do not grasp. For example in the 1990s it became clear within university circles that computer conferencing was not "just like email" – which was what staff believed if they attended only the first hour of training. More recently it has taken time to understand that blogging is not "just like computer conferencing", being in fact highly asymmetric because of feedback loops – and that wikis are not an editorial free-for-all (not if one wants practical results). Similar issues apply to wikis – especially for those who have not been exposed to the issues of authoring on industrial-strength wikis such as Re.ViCa,

The reasons for unsatisfactory learning effects of informal, web-based learning may have several origins. Those are seen to be: the lack of socio-cultural signalling in online spaces (Dietz-Uhler and Bishop-Clark (2001), time restrictions and additional work-load (Vonderwell, 2002). Furthermore, technological difficulties hinder internet efficacy (problems with accessibility, connection, measurability).

Conclusion

This analysis has not decried the fact that professional social networks have a large part to play in disseminating innovations. But they must be used with care for disseminating innovations which require conceptual leaps to understand.

It is questionable whether what happens in the case of informal on-line environments can be rated as learning. We need to notice that those spaces are labelled informal, thus it is suggested that what is really happening is an exchange of information, advice provision and hunting rather than learning.

Reading information does not imply learning. However, it may provide a valuable resource of information and serve as exemplars for teaching communities.

We have used the term informal peer/professional learning throughout the Claim, suggesting that it is hard to measure learning impact in such an environment. A mechanism for measuring learning impact needs to be developed and more research needs to be done in that area.

See Appendix 6 for more details.

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References overall

References regarding specific claims are found at the end of each Claim section.

Country studies

There are six main sets of country studies relevant to non-HE education.

1. OECD Country Studies. These typically cover just the OECD countries. For each country there is usually an overall country study and often several more specific studies. For an entry point to this material see http://www.oecd.org/countrieslist/0,3351,en_33873108_33844430_1_1_1_1_1,00.html.
2. Re.ViCa, <http://www.virtualcampuses.eu>. Country reports, e.g. for France, have URLs of the form <http://www.virtualcampuses.eu/index.php/France>. There are now 248 country reports – but at very varying degrees of depth. Although the focus is on ICT in higher education, many country reports have details of secondary education and sometimes material on ICT agencies and projects.
3. UNESCO Bangkok, <http://www.unescobkk.org/education/ict/>. See in particular the *Regional and Country Information* at <http://www.unescobkk.org/education/ict/countries/>. This covers most countries in Asia and Oceania.
4. InfoDev, <http://www.infodev.org/en/Index.html>. This has a comprehensive series of 53 country reports on ICT in education in almost all the countries of Africa. The entry point is <http://www.infodev.org/en/Project.7.html> – country studies are indexed from <http://www.infodev.org/en/Publication.354.html>.
5. The Demiray report on E-Learning Practices. This is a massive two-volume report of information and exemplars from around 40 countries, covering most countries in Scandinavia, Central and Eastern Europe, Western Asia, the Middle East and North Africa. See http://works.bepress.com/ugur_demiray/7/.
6. WikiEducator, http://wikieducator.org/Main_Page. The prime purpose of WikiEducator is to facilitate the generation of Open Educational Resources (OER), not to provide an encyclopedia of e-learning across countries and projects. However, there are 55 country pages on WikiEducator. At closer study, several of these pages are not “real” country pages. Moreover, the India country page is spread across 5 pages overall. Hence there are only around 40 “real” country pages. Around 11 have useful content.

Finally, one should not ignore Wikipedia. http://en.wikipedia.org/wiki/Main_Page. Many countries have a useful page on Wikipedia called *Education in Country*, for example Education in France, http://en.wikipedia.org/wiki/Education_in_France. Many analysts draw on these pages and there is a flow in the other direction also, though slow and irregular.

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Appendix 1: Comparative e-learning studies

Principles

There are two underlying principles for our international research.

1. The base country for reference has to be *England* not the UK. The population of England is around 51 million, so not that different in general order of magnitude from the UK with a population of 61 million.
2. Comparator countries to choose for more detailed analysis should ideally be selected on the following basis:
 - similar in size, GNP, OECD ICT indicators, demographic mix and governance
 - similar governance regimes for schools, FE and HE

However, there also has to be an acceptance of political factors – what countries do ministers obsess about, *whatever* the logic?

In addition it is useful if some “exo-benchmark” comparators are included – leaders (especially in “objective” indicators such as Pisa), upwardly mobile laggards and those with radically different approaches to organisation of the education sector – these could be much smaller (after all, that could correspond to a region of England) or one or two much bigger.

Some useful lists of comparators can be found in the refereed Country Reports on Re.ViCa.⁷⁹

Results

The following is a counsel of perfection but might be useful guidance if a much larger study were needed in the future.

Using the above guidance, plus political and historical considerations, one might generate a country list as follows:

1. Australia (population 20 million) – noting that schools and in part FE are devolved to the states.
2. Canada (population 33 million or so) – a traditional comparator, but with all education devolved to the provinces and with an unusual (some would say non-demand-led) lack of government-level quality and accreditation bodies – also a substantial but new private sector provision in HE.
3. Netherlands (population only 16 million) – a traditional comparator and a collaborative partner of the UK in e-learning (JISC etc) but with a highly stratified school system (ternary not binary divide) and a very conservative HE sector.

⁷⁹ See http://www.virtualcampuses.eu/index.php/Country_reports

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4. US (population 301 million) – impossible to ignore despite its size, GNP and private-sector dominated culture – noting that education is devolved to the states level, the larger US states are perhaps most directly of interest – certainly California.
5. Sweden (population 9 million) with a formally unified HE system with substantial private provision and a binary divided schools system – probably the best Scandinavian country to choose as a comparator despite traditional interest in Finland.
6. Malaysia (population 25 million) – not really the Asian Tiger of popular mythology but in reality probably a better comparator than Korea.

That would give six “Tier 1” countries. To understand their systems and so to judge the context/relevance of stories from them is at least 10 days work each so that it would be imprudent to have too many more of these.

Experience in other projects (Re.ViCa in particular) suggests that it is wise to have a “Tier 2” of countries which, if needed (ministerial request etc), can rise up the ranks to Tier 1. Based largely on the “rejects” from Tier 1, this leads to a list of another six as follows:

1. Finland (population 5 million – thus in reality much more relevant to Scotland and Wales) and with a binary HE system funded in a formerly non-demand-led way and now in transition, with mergers and other adjustments causing concern to staff.
2. Korea (population 48 million) – but with a very US-dominated culture and substantial private sector provision – best seen as an aspirational role model (in terms of school performance, not culture or politics).
3. Singapore (population just under 5 million – thus again in reality much more relevant to Scotland and Wales – or even more, as an “island city” to the larger metropolitan complexes in England) – but a traditional comparator – and a better choice nowadays than Hong Kong as the changes there continue to pull Hong Kong away from compatibility with UK thinking
4. New Zealand (population 4 million – thus yet again much more relevant to Scotland and Wales) – but a good source of interesting approaches and with a politically influential ethnic minority
5. United Arab Emirates (population 3 million) – the best of the Gulf countries to pick, if one wants a country in the Middle East
6. Spain (population 40 million) for a south European country although some would argue that Portugal (10 million) is a better choice in terms of history and relevance.

One would study these on an “exception” basis, picking up on points of interest.

Notice that even those two lists totalling 12 leave out whole continents (Africa and South America), halves of continents (West Asia and East Europe) and countries which commentators believe of relevance or to contain relevant role models: in particular Brazil, Mexico, India, Turkey and China. But Re.ViCa experience shows that getting a valid sense of context/relevance from examples in large or very different countries is difficult and time-consuming.

One could compare and contrast this list with the list of Re.ViCa countries for which full country reports were generated – see – but note the different educational and political context (HE not schools and FE; EU not UK/England).

For a very different perspective (from Turkey) see the Demiray report.

Some notes

Canada is divided into 13 provinces and territories of which the most important and relevant in e-learning terms are the following:

- British Columbia, population 4.1 million, thus rather smaller than Scotland but rather larger than Wales and similar in size to Ireland – the base of the University of British Columbia (UBC) and Simon Fraser University (SFU), two notable institutions in e-learning; and also of Thompson Rivers University (TRU) which now operates the Open Learning Agency for British Columbia.
- Alberta, population 3.2 million, thus a bit more than Wales – the base of Athabasca University, Canada’s Open University (a smaller version of the UK Open University), but also of the much smaller but nimble Mount Royal College.
- Ontario, population 12.1 million, thus not really comparable to any UK home nation (but approaching that of the Netherlands) – with several illustrious institutions. Some have a long history in distance education (e.g. University of Guelph, which has over 60 online courses), and others (e.g. the University of Waterloo, and the University of Ottawa) have extensive blended learning initiatives. The Ontario Institute for Studies in Education (OISE) contains eminent researchers in schools e-learning known across Europe and beyond.
- Quebec, in particular the Télé-université de Québec.

In the **US**, the largest state, California, has “only” 36 million people, and the next, Texas, just 23 million. Some 33 states have populations less than 6 million, bringing them into the zone of relevance to Scotland, Ireland, etc – and 13 states have populations in the range 1.0 to 3.0 million thus more like “city regions” in English terms.

Countries mentioned in the Claims information

These include the following 17 countries, several more than mentioned above:

- **Europe:** France, Germany, Sweden, Finland, Portugal
- **North America:** US, Canada, Mexico
- **Middle East:** Kuwait, Oman
- **Asia:** India, China, Japan, Singapore, Thailand
- **Australasia:** Australia
- **Africa:** South Africa.

Appendix 2: Conferences attended

Note that conference attendance (outside the UK) was funded from other sources, not from CAPITAL. Nevertheless the input was valuable.

The main international conferences attended in CAPITAL Year 2 were:

1. ICDE/EADTU, Maastricht, June 2009
2. ALT-C, Manchester, September 2009

3. Quality in E-Learning, ENQA, Stockholm, October 2009 – with side-trips to two Swedish universities and Tensta Gymnasium, an e-mature sixth-form college with innovative curriculum and ethnically diverse student base
4. Educause, Denver, November 2009 – with side-trips to Colorado Virtual Schools and Colleges and also the multi-state educational agency WCET
5. Online Educa, Berlin, December 2009
6. Learning and Technology World Forum, London, January 2009

Appendix 3: Key contacts

Following earlier discussion with Becta, it was agreed that there was not the effort to have a systematic structure of contacts.

However, informal contacts with EU projects, OECD, UNESCO, WCET, Australia and Canada were relevant at different stages.

Appendix 4: Country pen-pictures

As noted in the discussion on virtual schools and variant schools, knowledge of the socio-economic as well as the socio-technical surround of students (and their parents/carers for younger students) is vital to understand the relevance of particular countries to the educational system in England.

The aim is to produce pen-pictures for the main target countries. These will be adapted from the Re.ViCa country reports but extended for school-level aspects. As a taster, summaries have been provided for three European countries – Netherlands, Norway and Sweden, Thanks are due to the Re.ViCa project for making the material available.

As noted above, at least 17 countries have provided relevant material already.

Netherlands

*The Netherlands is often taken as a comparator to the UK (or England) by many UK ICT agencies including Becta and JISC. However, many aspects of the school and the university system are **completely unlike the UK situation** and readers are advised not to make simple extrapolations (despite this being often done)*

The Netherlands is a parliamentary democratic constitutional monarchy, located in Western Europe. It is bordered by the North Sea to the north and west, Belgium to the south, and Germany to the east. The Netherlands is a geographically low-lying and the 25th most densely populated country in the world, with 395 inhabitants per square kilometre (1,023 sq mi) – or 484 people per square kilometre (1,254/sq mi) if only the land area is counted, since 18.4% is water. The population in total is 16.3 million.

Education System

The different levels of education in the Netherlands

Education in the Netherlands is characterized by division: education is oriented toward the needs and background of the pupil. Education is divided over schools for different age groups, some of these are in turn divided in streams for different educational levels. Schools are furthermore divided in public and special (religious) schools. The Programme for International Student Assessment, coordinated by the OECD, ranks the education in the Netherlands as the 9th best in the world as of 2008, being significantly higher than the OECD average.

Education policy is coordinated by the Dutch Ministry of Education, Culture and Science, together with municipal governments.

Compulsory education (*leerplicht*) in the Netherlands starts at the age of five, although in practice, most schools accept children from the age of four. From the age of sixteen there is a partial compulsory education (*partiële leerplicht*), *meaning a pupil must attend some form of education for at least two days a week*. Compulsory education ends for pupils age eighteen and up.

There are public, special (religious), and private schools. The first two are government-financed and officially free of charge, though schools may ask for a parental contribution (*ouderbijdrage*).

Public schools are controlled by local governments. Special schools are controlled by a school board. Special schools are typically based on a particular religion. There are government financed Catholic and Protestant elementary schools, high schools, and universities, furthermore there are government financed Jewish and Muslim elementary schools and high schools. In principle a special school can refuse the admission of a pupil if the parents indicate disagreement with the school's educational philosophy. This is an uncommon occurrence. Practically there is little difference between special schools and public schools, except in traditionally religious areas like Zeeland and the Veluwe (around Apeldoorn). Private schools do not receive financial support from the government.

There are also a considerable number of publicly financed schools which are based on a particular educational philosophy, for instance the Montessori Method, Pestalozzi Plan, Dalton Plan or Jena Plan. Most of these are public schools, but some special schools also base themselves on any of these educational philosophies.

In elementary and high schools the students are assessed annually by a team of teachers, who determine whether the pupil has advanced enough to move on to the next grade. If the pupil has not advanced enough he or she may have to retake the year (*blijven zitten*, English: *stay seated*); this is an uncommon occurrence. Highly intelligent children are sometimes granted the opportunity to skip an entire year, yet this happens rarely and usually in elementary schools.

All school types (public, special and private) are under the jurisdiction of a government body called *Onderwijsinspectie* (Education Inspection) and can be forced to make changes in educational policy or risk closure.

Schools

Between the ages of four to twelve, children attend basisschool (elementary school; literally, “basis school”). This school has eight grades, called groep 1 (group 1) through groep 8. School attendance is compulsory from group 2 (at age five), but almost all children commence school at four (in group 1). Groups 1 and 2 used to be called kleuterschool (nursery). From group 3 on, children will learn how to read, write and do maths. In group 7 and 8 many schools start with teaching English to their students. *In group 8 the vast majority of schools administer the Cito-toets (Cito test, developed by the Centraal instituut voor toetsontwikkeling) to recommend **what type of secondary education should be followed**.* In recent years this test has gained authority, but the opinion of the group 8 teacher has remained the most crucial factor in this recommendation.

Voortgezet Onderwijs

After attending elementary education, children aged 12 years old attend voortgezet onderwijs (high school; literally “continued education”). *Depending on the advice of the elementary school and the score of the Cito test, pupils are assigned to either vmbo, havo or vwo.*

The first year of all levels is referred to as the brugklas (litt. bridge class), as it connects the elementary school system to the secondary education system. During this year, pupils will gradually learn to cope with differences such as dealing with an increased personal responsibility.

When it is not clear which type of secondary education best suits a pupil, there is an orientation year for both vmbo/havo and havo/vwo to determine this. In addition, there is a second orientation year for havo/vwo when inconclusive.

Furthermore it is possible for pupils who have attained the vmbo diploma to attend two years of havo-level education and sit the HAVO-exam, and for pupils with a havo-diploma to attend two years of vwo-level education and then sit the VWO exam.

Vmbo

The vmbo (voorbereidend middelbaar beroepsonderwijs, literally, “preparatory middle-level vocational education”) education lasts four years, from the age of twelve to sixteen. It combines vocational training with theoretical education in languages, mathematics, history, arts and sciences. Sixty percent of students nationally are enrolled in vmbo. Vmbo itself has four different levels, in each a different mix of practical vocational training and theoretical education is combined.⁸⁰

1. Theoretische leerweg (literally, “theoretical learning path”) is the most theoretical of the four, it prepares for middle management and vocational training in the mbo-level of tertiary education and it is needed to enter havo.
2. Gemengde leerweg (literally, “mixed learning path”) is in between the Theoretische- and Kaderberoepsgerichte Leerwegen.

⁸⁰ Thus streaming within streaming.

3. Kaderberoepsgerichte Leerweg (literally, “middle management-oriented learning path”) teaches theoretical education and vocational training equally. It prepares for middle management and vocational training in the mbo-level of tertiary education.
4. Basisberoepsgerichte Leerweg (literally, “basic profession-oriented learning path”) emphasizes vocational training and prepares for the vocational training in the mbo-level of tertiary education.
5. Praktijkonderwijs (literally, “practical education”) consists out of mainly vocational training. It is meant for pupils who would otherwise not obtain their vmbo-diplomas. After obtaining this diploma pupils can enter the job market without further training.

For all of these levels there is Leerweg Ondersteunend Onderwijs (literally, “learning path supporting education”), which is intended for pupils with educational or behavioural problems. *These pupils are taught in small classes by specialized teachers.*

Havo

The havo (hoger algemeen voortgezet onderwijs, literally, “higher general continued education”) has five grades and is attended from age twelve to seventeen. A havo diploma provides access to the HBO-level (*polytechnic*) of tertiary education.⁸¹

The first three years together are called the Basisvorming (literally, “basis forming”). All pupils follow the same subjects: languages, mathematics, history, arts and sciences. In the third year pupils must choose one of four profiles. A profile is a set of different subjects that will make up for the largest part of the pupil’s timetable in the fourth and fifth year, that are together called the Tweede Fase (literally, “second phase”). A profile specializes the pupil in an area, and some hbo and wo studies therefore require a specific profile. Students must also choose one to three additional subjects. Furthermore, Dutch and one foreign language (most often English), as well as some minor subjects, are compulsory. In all profiles mathematics is compulsory, but the level of difficulty differs for each profile. Pupils still have some free space, which is not taken by compulsory and profile subjects: here they can pick two subjects from other profiles. Sometimes pupils choose more than two subjects, this can result in multiple profiles.

These are the profiles:

1. Cultuur en Maatschappij (literally, “culture and society”) emphasizes on arts and foreign languages (French, German and less frequently Spanish, Russian, Arabic and Turkish). In the province of Friesland, West Frisian is also taught. The mathematics classes focus on statistics and stochastics. This profile prepares for artistic and cultural training at the hbo.
2. Economie en Maatschappij (literally, “economy and society”) emphasizes on social sciences, economy, and history. The mathematics classes focus on statistics and stochastics. This profile prepares for social science and economy training at the HBO.

⁸¹ HE is streamed also.

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3. Natuur en Gezondheid (literally, “nature and health”) emphasizes on biology and natural sciences. The mathematics classes focus on algebra, geometry and calculus. This profile is necessary to attend medical training at the HBO.
4. Natuur en Techniek (literally, “nature and technology”) emphasizes on natural sciences. The mathematics classes focus on algebra, geometry and calculus. This profile is necessary to attend technological and natural science training at the HBO.

Vwo

The vwo (voorbereidend wetenschappelijk onderwijs, literally, “preparatory scientific education”) has six grades and is attended from age twelve to eighteen. A vwo diploma provides access to wo training, although universities may set their own admittance criteria (e.g. based on profile or on certain subjects). The vwo shares the profiles system described above with the HAVO route. The distinctions that can be made are that the difficulty level is higher, and that the Tweede Fase lasts three years instead of two.

The vwo is divided in Atheneum and Gymnasium. *A Gymnasium programme is similar to the Atheneum, except that Latin and Greek are typically compulsory until the third year.* Not all schools teach the ancient languages throughout the entire Basisvorming. Latin may start in either the first or the second year, while Greek may start in second or third. At the end of the third year, a pupil may decide to take either or both languages in the Tweede Fase, where the education in ancient languages is combined with education in ancient culture. The subject that they choose, although technically compulsory, is subtracted from their free space.

Vwo-plus, which is also known as Atheneum-plus, Vwo+ or Lyceum, offers extra subjects like philosophy, extra foreign languages and courses to introduce students to scientific research.

Vavo

Vavo (voortgezet algemeen volwassenen Onderwijs, literally, “prolonged general adult education”) is ghvmbo, havo or vwo taught for adults.

Vervolgonderwijs

Mbo

Mbo (middelbaar beroepsonderwijs, literally, “middle-level vocational education”) is oriented towards vocational training. Many pupils with a vmbo-diploma attend mbo. Mbo lasts three to four years. After mbo, pupils can enrol in hbo or enter the job market.

Hbo

With an mbo, havo or vwo diploma, pupils can enrol in hbo (Hoger Beroeps Onderwijs, literally “higher professional education”). It is oriented towards higher learning and professional training, which takes four to six years. The teaching in the hbo is standardized as a result of the Bologna process. After obtaining enough credits (ECTS) pupils will receive a 4 years (professional) Bachelor’s degree. They can choose to study longer and obtain a (professional) Master’s degree in 1 or 2 years.

Wo

With a vwo-diploma or a propedeuse in hbo, pupils can enrol in wo (wetenschappelijk onderwijs, literally “scientific education”). Wo is only taught at a university. It is oriented towards higher learning in the arts or sciences. The teaching in the wo, too, is standardized due to the Bologna process. After obtaining enough credits (ECTS), pupils will receive a Bachelor of Arts, Bachelor of Science or Bachelor of Laws degree. They can choose to study longer in order to obtain a Master’s degree of different fields. At the moment, there are three variants: Master of Arts, Sciences, and Master of Laws. A theoretical Master typically lasts one year, however the majority of practical (e.g. medical), technical and research Masters require two or three years.

Dutch higher education

There are two types of higher education in the Netherlands (see also above). The universities prepare students for independent scientific and scholarly work in an academic or professional setting. The hogescholen are universities of applied sciences that prepare students for a wide variety of careers in seven sectors: agriculture, engineering and technology, economics and business administration, health care, *education/teacher training*, social welfare, and fine and performing arts. This type of higher education is known in Dutch as HBO (hoger beroepsonderwijs). At present there are 14 universities in the Netherlands and 45 universities of applied sciences.

The differences between the universities of applied sciences and the research universities have become less marked in the course of time. Nevertheless, a number of differences remain. Universities of applied sciences offer four-year programmes, leading to a Bachelor’s degree, which are strongly geared towards practical training. The programmes focus on specific occupations and include traineeships or work placements that provide students with practical work experience. Universities of applied sciences also offer an increasing number of programmes that lead to a Master’s degree.

For more details of the Dutch system and ICT in universities see
<http://www.virtualcampuses.eu/index.php/Netherlands>

Norway

Norway is a constitutional monarchy in Northern Europe that occupies the western portion of the Scandinavian Peninsula. Norway is now amongst the wealthiest countries in the world. It is the world’s third largest oil exporter after Russia and Saudi Arabia and the petroleum industry accounts for around a quarter of GDP.

The population of Norway is just over 4.5 million, making it similar in population to many smaller European countries and regions (e.g. Scotland). Norway has a Scandinavian welfare system and the largest capital reserve per capita of any nation.

Norway was ranked highest of all countries in human development from 2001 to 2006, and came second in 2007 (to fellow Nordic country Iceland).

Schools

Education in Norway is mandatory for all children aged 6-16. Ultimate responsibility for the education lies with the Norwegian Ministry of Education and Research. There is a useful web site for the Ministry – in English.⁸²

The Norwegian school system can be divided into three parts:

1. Elementary school (Barneskole, age 6-13)
2. Lower secondary school (Ungdomsskole, age 13-16)
3. Upper secondary school (Videregående skole, age 16-19).

Elementary and lower secondary school are mandatory for all children aged 6-16. (Before 1997, mandatory education in Norway started at the age of 7.) Students almost always have to change school when they enter lower secondary school and upper secondary school, as most schools only offer one of the levels.

Elementary school (Barneskole, grades 1-7, age 6-13)

In the first year of elementary school, the students are mostly playing educational games and learning social behaviour. In grades 2 through 7, they are introduced to mathematics, English, Norwegian, science, religion, and gymnastics, complimented by geography, history, and social studies in the fifth grade. No grades (marks) are given at this level.

Lower secondary school (Ungdomsskole, grades 8-10, age 13-16)

When the students enter lower secondary school, at age 12 or 13, they begin getting grades (marks) for their work. The grades they get will determine whether they get accepted at their high school of choice or not. From the eighth grade, the students can choose one elective (valgfang). Typical subjects the students are offered are the languages German, French and Spanish as well as additional English or Norwegian studies. Before the educational reform starting August 2006, students could choose a practical elective instead of the languages.

Upper secondary school (Videregående skole, grades VG1-VG3, age 16-19)

Upper secondary school (akin to high school) is 3 years of optional schooling, although recent changes to society (few jobs available for the age group) and law (government required by law of 1994 to offer secondary schooling in one form or another to everyone between 16 and 18 who submit the application form) has made it largely unavoidable in practice.

Secondary education in Norway is primarily based on public schools, and is attended by 96% of the students. Until 2005, Norwegian law held private secondary schools to be illegal unless they offered a “religious or pedagogic alternative”, meaning that the only private schools in existence were religious (Christian), Steiner/Waldorf and Montessori schools. *The first “standard” private upper secondary schools opened in the fall of 2005.*

⁸² See <http://www.regjeringen.no/en/dep/kd.html?id=586>

Since the introduction of the reform “Kunnskapsløftet” (knowledge promotion) in autumn 2006,⁸³ a student will apply for a general education (*studiespesialisering*) or a vocational studies (*yrkesfag*) path. **Inside these main paths there are many sub-paths to follow.**

The new reform makes mandatory the incorporation of IT into the schooling, indeed many counties (who are responsible for the public high schools) offer laptops to general studies students for free or for a small fee. Kunnskapsløftet also makes it harder to switch between electives that students take in the second and third year in the general studies path.

Higher education

Higher education in Norway is offered by a range of seven universities, five specialised colleges, and 25 university colleges – *as well as a range of private colleges*. Education now follows the Bologna process model involving Bachelors (3 years), Masters (2 years) and Doctoral (4 years) degrees. Acceptance is offered after finishing upper secondary school with general study competence.

Public education is free, with an academic year with two semesters, from August to December and from January to June.

Higher education is defined in Norway as anything beyond upper secondary school. It normally lasts 3 years or more. To be accepted to most higher education institutions, students must have attained a general studies diploma (*generell studiekompetanse*). This can be achieved by taking general studies while in upper secondary school or through a law where a person must be above 23 years of age, have 5 years of combined schooling and work experience and have passed exams in Norwegian, mathematics, natural sciences, English and social studies. Some degrees also require special electives in second and third grade of high school (e.g. mathematics and physics for an engineering studies programme.)

Higher education is broadly divided into:

1. Universities, which concentrate on theoretical subjects (arts, humanities, natural science). They provide degrees of bachelors (3 years in total), masters (5 years in total) and PhD (8 years in total). *Universities also run a number of professional studies programmes, including law, medicine, dentistry, pharmacy and psychology, but these are generally separate departments that have little to do with the rest of the university institution.*
2. University colleges (*høyskole*), which supply a wide range of educational choices, including university bachelor degrees, engineering degrees and professional vocations like teacher and nurse. The grade system is the same as it is for universities.
3. Private schools, which tend to specialize in popular subjects where there is limited capacity in public universities or university colleges: such as business studies, marketing or fine arts. Private providers do not loom large on the horizon, although the fraction of students attending private providers is now 10% in higher education, compared to 4% in secondary and 1.5% in primary education.

⁸³ Thus a recent division.

In contrast with campus-based education, there is substantial use of private organisations for distance learning.⁸⁴ The prime example is NKI.⁸⁵

For more see <http://www.virtualcampuses.eu/index.php/Norway>

Sweden

Sweden, officially the Kingdom of Sweden, is a Nordic country on the Scandinavian Peninsula in Northern Europe. Area-wise, it is one of the largest countries in Europe. Its population is around 9 million.⁸⁶ The population is very unevenly distributed: some 84 % live in urban areas, and about one third in the 3 major cities of Stockholm, Gothenburg and Malmö.

Sweden is a constitutional monarchy (parliamentary democracy). It has been a member of the European Union since 1995, but it has not joined the European Monetary Union. The capital and largest city is Stockholm, with a population of around 800,000 and metropolitan area of 2 million. The official language is Swedish.

Swedish education policy

(mainly sourced from: Nationellt Centrum för Flexibelt Lärande)

Sweden has a strong social-democratic tradition which stresses the redistributive role of state, social inclusion and equality, underpinned by high levels of taxation and public spending. The education system is an integral component of the Swedish concept of the welfare state, and the Swedish spending on education is, indeed, amongst the highest in the world.

Since the last election (2006), Sweden has been governed by the Alliance for Sweden, a coalition between four parties (Christian Democrats, Centre Party, Liberal Party and Moderaterna). One of the more evident traits of change is that the Alliance is stressing the decentralisation of the education system. Thus, more power is being moved to the municipalities for the basic education levels and to the universities and university colleges at tertiary level. One of the consequences of that is that some state authorities and agencies with national responsibility to e.g. support development of the education systems have been closed. The new government focuses heavily on advancing the compulsory school via large investments in a reformed teacher education and in-service training for teachers.

Swedish education system

(mainly sourced from: OECD Thematic Review of Tertiary Education – Country Background Report for Sweden.)

The Swedish education system consists of a compulsory comprehensive nine-year school, a three-year upper-secondary school with pre-academic as well as vocational programmes, and a unitary

⁸⁴ There is a useful overview of this subsector at <http://home.nettskolen.nki.no/~morten/pp/CHANEDParis.ppt>

⁸⁵ See http://www.virtualcampuses.eu/index.php/NKI_Internet_College

⁸⁶ Thus about twice the size of Scotland – and larger than all the non-London English regions.

higher education sector that includes academic, professional and vocational programmes. There is also a specific sector, the *folk high schools*, that provides adult education at all levels, ranging from basic school qualifications to vocational programmes, some of which can be described as offering an alternative to higher education.

Additionally, municipal adult education offers education at compulsory and upper-secondary school level for those lacking these qualifications as well as vocational training for adults. This is a comparably large subsystem with 170,300 students in the academic year 2007/08 and close to 70,000 in language training for immigrants. After a decrease in students (17 % in 2007/08) the number of students is growing again, to a large extent due to the financial situation in the world and its consequences for Swedish labour markets.

Advanced Vocational Education is a form of vocational post-secondary education designed and carried out in close co-operation between enterprises and course providers (mostly higher education, but also upper-secondary schools, municipal adult education and companies).

Equal access to education has long been one of the pillars of the Swedish welfare state. Education from primary school to higher education is mainly tax financed and free of charge to the student. The main distinguishing feature of HE from other forms of education is that HE is based on science or art and on tested experience.

Higher education in Sweden

(mainly sourced from: Study in Sweden, OECD Thematic Review of Tertiary Education – Country Background Report for Sweden and Education at a Glance – OECD Briefing Note for Sweden)

See in particular the OECD report for more information about the Swedish higher education system.

Swedish tertiary education is provided mainly in the higher education sector, which comprises universities and university colleges. Today, there are 14 state universities, 22 state university colleges, 3 private institutions with undergraduate as well as postgraduate education, and a number of smaller private institutions. The HEIs range from large multi-faculty institutions to specialized institutions of different sizes.

The report does not give details of the FE system but goes into much more detail about HE. For more see <http://www.virtualcampuses.eu/index.php/Sweden>

Other countries

See the Re.ViCa wiki for much more on these. The country reports act as entry points to the relevant literature. It is worth studying some smaller countries and those with “liminal region” status⁸⁷ as it seems that there may be more innovative solutions found in such countries. A useful starting point for analysis is the list of all countries classified by income (in World Bank terms) and tagged by population information. See http://www.virtualcampuses.eu/index.php/All_countries_by_income

⁸⁷ See <http://www.virtualcampuses.eu/index.php/Liminality>.

and focus on the upper-middle-income and high-income groups of countries as those most likely to be relevant to England.

Appendix 5: Claim 10 research on blogs

Note that blogs are only one example of social networking – albeit one that was until recently very topical among analysts.

Websites aimed at practitioners

(Mainly in the US that informed the research)

Examples of educational networks, forums, chats, associations and blogs aiming at informal learning for practitioners are numerous. *There is a great need to find evaluations of these. Evidence from HE benchmarking in the UK indicates that they are not seen by managers as useful to practitioners in the UK – but the situation could well be different in the US.*

HE networks for higher education professionals:

- **Educause** is an active US network/association ‘whose mission is to advance higher education by promoting the intelligent use of information technology’(http://www.educause.edu/).
- ELI (Educause Learning Initiative): <http://net.educause.edu/eli10>
- Net@EDU: <http://www.educause.edu/Net@EDU/NetEDUHome/AboutNetEDU/391>
- ECAR: http://www.educause.edu/ecar?page_id=16004
- **Maricopa**: <http://mcli.maricopa.edu/> (US)

The Maricopa Center for Learning and Instruction aims at ‘providing entries for effective teaching and learning pedagogy, technology innovation, and the scholarship of teaching and learning by working collaboratively with faculty, administrators, and district-wide group’.

Other networks:

- [World Lecture Hall \(WLH\)](http://www.utexas.edu/world/lecture/) from the University of Texas, Austin contains an extensive list of links to faculty-created web pages. They are organized by subject categories. (<http://www.utexas.edu/world/lecture/>)
- [Classroom Connect](http://www.classroomconnect.com/) the online companion to the newsletter, provides information and resources for teachers who use the Internet. See the G.R.A.D.E.S database, a Yahoo-like archive for educational resources. (<http://www.classroomconnect.com/>)
- [Connections+](http://www.mcrel.org/resources/links/hotlinks.asp) from the Mid-continent Regional Educational Laboratory (McREL), “consists of Internet resources--lesson plans, activities, curriculum resources--linked with corresponding subject-area content standards (From Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education).” <http://www.mcrel.org/resources/links/hotlinks.asp>
- [Education World](http://www.education-world.com/) bills itself as “the place where educators go to learn” and has a keyword searchable collection of articles, resources, and lesson ideas. <http://www.education-world.com/>
- [free-ed.net](http://www.free-ed.net) provides a directory to the “best course notes, outlines, tutorials, courses and e-texts we

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can find anywhere on the 'net."

<http://www.free-ed.net/>

- [Gallery of Courses Taught with Technology](#) produced in conjunction with the Journal of Computer Enhanced Learning, "is composed of vignettes that describe the what, how, why, and impact of technology upon learning in specific courses. Readers can organize the vignettes according to academic discipline, educational notion, computer enhanced technique, assessment methodology, dates submitted and last updated, top quartile (as judged by a panel), or any combination of the criteria."
<http://iccel.wfu.edu/gallery>
- [Gateway to Educational Materials \(GEM\)](#) is a consortium effort, support by the National Library of Education and the U.S. Department of Education, to create an operational framework to provide the nation's teachers with "one-stop, any-stop" access to substantial, but uncatalogued, collections of Internet-based educational materials available on various federal, state, university, non-profit, and commercial Internet sites.
<http://geminfo.org/>
- [Halls of Academia](#) a subject organized collection of links to web resources, each annotated, provided by TENET
<http://www.tenet.edu/academia/main.html>
- [Internet Projects Registry](#) is Global SchoolNet's "'Stop Looking!' Resource! Our registry is the one central place on the Internet where you can find projects from across the globe to bring into your classroom."
<http://www.globalschoolhouse.org/pr/>
- [Internet Scout Report](#) for a long time has been an excellent source of educational sites that are carefully reviewed.
<http://wwwscout.cs.wisc.edu/scout/>
- [Kathy Schrock's Guide for Educators](#) hosted by the Discovery Channel and updated daily, "is a categorized list of sites on the Internet found to be useful for enhancing curriculum and teacher professional growth."
<http://school.discovery.com/schrockguide/MindEdge> "is a one stop destination that gives learners all the tools they need to search for, compare, and pre-register for the courses they want- whether they're right around the corner, or halfway around the world."
<http://www.mindedge.com/>
- [Multimedia Educational Resources for Learning and Online Teaching \(MERLOT\)](#) "is a free and open resource designed primarily for faculty and students in higher education. With a continually growing collection of online learning materials, assignments and reviews, MERLOT helps faculty enhance instruction."
<http://merlot.csuchico.edu/>
- [Roadmap to the Web for Educators](#) A selection of top web picks from the editors of [T.H.E. \(Technology in Higher Education\) Journal](#).
<http://www.thejournal.com/highlights/roadmap/>
- [Scout Report Signpost](#) from the folks at the Internet Scout Project, "contains only the best Internet resources, as chosen by the staff of the Scout Report, catalogued and organized for efficient browsing and searching."
<http://www.signpost.org/signpost/>
- [TeAch-nology](#)
"offers a wide variety of resources intended to bring educators into the world of teaching with technology. As a portal, it provides links to valuable and useful information relative to current and past practice in the field of education." <http://www.teach-nology.com/>
- [Teachers@Work](#) features well over 1000 rated and reviewed educational web sites.

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<http://teachers.work.co.nz/>

- [TeleCampus](#) comes from Province of New Brunswick, offers a database of more than 7,000 online courses from a variety of educational institutions and private organizations in over than 15 countries.
<http://telecampus.edu>
- [ThinkQuest Library of Entries](#) presents a large catalogue of award winning educational and interactive web sites designed by students
<http://library.advanced.org/library/>
- [WannaLearn](#) “has been designed to provide a wide range of users with an effective and efficient means of accessing the best free learning opportunities available on the Web, in virtually every subject and area of interest.”
<http://www.wannalearn.com/>
- [World Wide Web Courseware Developers’ Members Courses](#) is a subject organized directory of web courses developed by members of the WWDEV Listserv.
<http://www.unb.ca/web/wwwdev/c3.html>
- <http://teacherbootcamp.edublogs.org/2009/08/11/lack-of-tech-in-the-land-of-robots-and-hybrid-cars-by-neal-chambers/> -Shelly Teller’s blog with ‘guest’ bloggers from all over the world ,practitioners are commenting – winner of the Edublog award for the most influential tweet/tweet series/tweet discussion

Australian educational blogs

There is an amazingly long list of Australian educational blogs created and maintained by *teachers*. For each we give the blog name together with the introduction provided by the teacher.

[Solo PerformanceMusic Matters](#)

This Blog has been designed for Unit 3-4 VCE students at Braemar College by Nicholas Cowall (Director of Music). The Blog will attempt to cover all things related to VCE Music Solo Performance and help my students through a musical journey of Music Performance, Aural, Theory and Analysis. I am a an experienced conductor, vocal coach, music educator and vocalist with a keen interest in technology and how it can be applied to music pedagogy.

[Scribbler’s Den](#)

I am a Queensland secondary school teacher with classes in English, Geography, History and Multimedia. My blog covers those subjects and teaching in general.

[Penny Ryder Teaching Challenges](#) and [Link 4 Learning](#)

I am a primary school teacher in Australia. I love teaching and the kids I teach. On my blog “Teaching Challenges” I post my reflections on teaching, innovative practices and the implementation of learning technologies in the classroom. I also have a podcast “Link 4 Learning” which I hope will strengthen the relationship between parents and teachers in education.

[Darcy’s Blog](#)

I am a deputy principal at a largish state high school in NSW and an occasional blogger:

<http://darcymoore.wordpress.com/> a growing range of interests and skilled colleagues to enjoy.

[Tomaz Lasic](#)

I am a teacher and ICT coordinator at Belmont City College, a medium-size public school in one of the poorest areas of Perth. My creed is “what if?” and I often tinker with ICT, particularly with Moodle and Web2.0 tools. “Human” is the home of Moodle tutorials called 2 Minute Moods, stories of integration of Moodle and ICT

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with our staff and some personal musings on technology, particularly from the point on ICT and social equity. As I write I am wary (yet sometimes guilty) of adding to the glut of techno-hype.

[Lyn's Blog](#)

I'm new to blogging but not new to teaching English. My blog's a learning journey for me and I plan to reflect on teaching English and using technology in the classroom. I want to share my experience and learn from others.

[All teachers are learners – All learners are teachers](#)

Lauren O'Grady – Educator in Victoria. My blog is a place to vent, research, collaborate, discuss purposeful teaching which is relevant to our students and to our current world. My current interests in the web world are IWB's, student voice and collaborative multiliteracy projects.

[Melbourne Tutor](#), [Intepreter](#), [Translator](#) and [Language Classes](#)

I am education and language entrepreneur with many businesses that work towards providing opportunities for students of all origins. We believe that globalism is an opportunity for many if we are passionate enough about structuring the opportunity so it can be taken. I am from Melbourne, but travelling the world.

[LIPS – Leaders in Public Schools](#)

Roger Pryor – School Education Director – Newcastle – Hunter Central Coast Region – NSW. This blog contains posts which largely relate to the context for delivery of education in the 21st Century, and tries to challenge leaders in schools to take a broad view of planning educational service delivery which may go beyond "School Planning" to "Planning School"

[A Teacher's Adventures in Cyberspace](#)

I am a secondary science teacher venturing through the cybercosmos, seeking to stimulate the use web 2.0 tools for teaching and learning. My blog ranges from the obscure (make an IWB from a wiimote) to the essential (how to save youtubes). I blog like a squirrel on crack. (Adelaide, SA)

<http://mrsbanjer.wetpaint.com>

Fiona Banjer. Early Years teacher who has moved temporarily into the teacher librarian position. I am passionate about the value of providing www and Web2.0 applications into learning experiences. I have almost completed the first subject of my MEd (Technology) – computers of course! I'll go and update my blogs straight away...!

[applied learning](#)

Bianca Spence. The purpose of this wiki is to share resources that are relevant and up-to-date for Secondary school teachers. It has been developed primarily as a resource for Victorian teachers and focuses on applied learning and VCAL.

[technoLOTE](#)

Jess McCulloch, Warrnambool, Vic. I teach LOTE (Chinese) to years P-10 at a small country school in SW Vic. My blog is about integrating more ICT into the language classroom (namely Web 2.0 applications), but also about language teaching and learning in general.

[Booked Inn: heroic adventures in teacher-librarianship](#)

Ian McLean, Penrith, NSW. Teacher-librarian at Penrith Public School, and a past editor of *Scan* professional journal (NSW Department of Education and Training, 1998-2002). Involved with collaborative teaching, ICT, wikis, blogs and book raps.

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[Watershed](#)

John Larkin. I am a teacher of History at St Joseph's Catholic High School, Albion Park, NSW. I have been working with technology in education for 15 years. In addition to exploring new ways to integrate technology in the curriculum I have been providing professional development for teachers in the field here in Australia and overseas. I also have a [web page](#) about my work and [resources](#) for teachers.

[And another thing](#)

Sue Tapp. I am a teacher of English in a government High School in Victoria. I am attempting to integrate Web 2.0 in my classroom and to develop a better understanding of the pedagogy and the technology.

[templestowecluster](#)

Helen Marotta: I work with five schools; one secondary, three primaries and a special school to encourage and support the teachers with using ICT in the classroom. We are experimenting with blogging, Mobile technologies, and movie-making. I don't have my own class this year so this Blog is more a collection of what I am learning as I get around to see what is happening everywhere else.

[Skoolaborate](#)

[Westley Field](#): Skoolaborate is a Virtual Island, Blog and Wiki that allows innovative, creative, cutting edge schools to collaborate with like minded schools worldwide. It will be set up in regions each one targeting a vertical breadth of time zones, for example the Asia Pacific time zones (China, Korea, Japan, Indonesia, Australia, New Zealand and other interested Asia Pacific countries) or the Americas Time Zones targeting Canada, the USA, Mexico, South America etc. I also have a [web page](#) about my work and the work I do at [MLC School](#), Sydney, Australia.

[6/7C Blog & Podcast](#)

Michael Cridland: I am a Year 6/7 Teacher at [Petrie Terrace State School](#) in Brisbane, and I'm interested in the effective integration of Information and Communication Technology in the classroom to support student learning! This is my students' blogging and podcasting space on the web: [Year 6/7 Blog and Podcast!](#) We hope you enjoy reading and listening to our blog and podcasts as much as we enjoy writing and creating them!

[21st Century Skills](#)

Mark Collinson: Mullumbimby Northern NSW. What started as a way to document ICT skills achieved by my K-6 students, as well as a means to inform planning has become a way of reflecting upon and discussing issues related to the achievement of higher order thinking skills in the young 21st century citizen.

[Miller's Spin – Exploring Technology in Education](#)

Alex Miller: This blog has been created to explore ways of using technology & web 2.0 tools in education. I live in Coffs Harbour and work for The North Coast Institute of TAFE NSW.

[Learning – Thinking – Playing](#)

Tony Richards: I have created my blog as a way to express my ideas and thoughts on the application of ICT in education and as a way to document my own development as an ICT consultant. Having worked as a primary teacher, ICT advisor, project manager, Network manager, New Media specialist (whatever that means), executive officer and IT Director I have had a lot of very valuable experiences I like change and I like challenges – I also like sharing and developing ideas with like minded people to engage our teachers and students and educate our bureaucratic friends. I am blessed with the ability to think outside the box and to be inventive and this is what I hope I bring to my work as a consultant and professional development provider – We will see.

[Digital Stories](#)

International issues

Gail Casey: I am a secondary teacher from Geelong High School, Victoria with a passion for global learning and global classroom projects where digital story telling plays a major part. I have worked with many groups of teachers around the world and in 2007 taught ESL in Korea and keeping a [blog](#). I am presently enjoying our [class blog](#) in the hope to build social networks into all of my classes. Working and learning together using web2.0 resources leads to a greater need for educators to build critical literacy and creativity into their curriculum, a [wiki](#) that I have started to build, with a group of interested educators.

[Digital Chalkie](#)

Paul Reid: I'm a teacher in Western Australia integrating ICTs across the curriculum. The purpose of Digital Chalkie is to provide a hub for Australian educators using ICT to engage and facilitate the best educational outcomes for their students. The domain name uses the word 'chalkie' as an affectionately defunct Australian term for ICT using teachers. The goal is to establish a hub/magazine/think-tank for teachers to support each other and to collaborate in the use of ICTs and 'web 2.0' tools. All educators are welcome to make posts and to comment on the posts of others. With the help of [Brad Hicks](#) we are now doing regular [webcasts](#) on topics of interest to the Digital Chalkie hub audience. Again to further these collaborative opportunities, we welcome other edubloggers to participate in the live sessions.

[iHistory](#)

Dave Fagg: I am a History and English teacher at Eaglehawk SC, in Bendigo, Victoria. I am experimenting with mobile technology (phones and mp3s) – in particular, combining field trips with podcasts.

[Podkids Australia](#)

Paul Fuller: I am the teacher of a Year 4 / 5 class in Western Australia, and I am passionate about using technology to enhance learning outcomes across the curriculum. Podkids Australia is a podcast that the students write and record themselves. As you will hear [in the show](#), this medium is an incredibly engaging way of encouraging students to write and reflect on their learning. Our latest class project is [Albert the Blogging Bear](#). Albert the Bear travels home with the children from my class, and the students record his adventures in his blog. You can read his blog at www.albertthebear.com. I also maintain the [Orange Grove Primary school blog](#) and from time to time record my thoughts in a professional blog entitled [Educating the Digital Generation](#).

[21st Century Educator](#)

Brett Moller: I am a young educator interested in the use of technology in the curriculum and the effective development of technology in education programs. I am currently studying my masters of Education in the area of Education Technologies. I run a blog and podcast that you can find at [my website](#).

[Mobile Learning](#)

Leonard Low: I am Online Campus Manager at the Canberra Institute of Technology, A.C.T. Representative on the Flexible Learning Framework's E-Standards for Training Experts Group, and previous A.C.T. Toolbox Champion. Designing, developing, delivering and managing flexible learning has given me a broad range of experiences, and particular interests in Mobile Learning and the use of Web 2.0 ("Social Web") tools in education. I have a degree in Computer Science, specialising in Internet Application Development, a diploma in teaching drama, and other qualifications in training and management.

[Asynchronous Collaborative Learning Activities](#)

Albert Ip: As stated on my blog intro: "I am a practising learning technologist and advocate of technology for effective pedagogy. I wrote the [Fablusi™](#) software (the online role play simulation platform) and am actively trying to convince people to use this powerful pedagogical strategy. As the executive editor of a print-based [E-Learning Australia Magazine](#), I have a broad interest in e-learning, including [Learning Object](#), [Metadata](#),

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collaborative learning technologies, [SCORM](#) and [SCORM courseplayer](#) and other issues in e-learning.” I also have several blogs including [Random Walk in E-Learning](#), [Learning for 2020](#), [Corporate E-Learning](#) and [Conversation With My Evil Twin](#)

[An Identity of One's Own](#)

nb: I'm an early career English teacher at a secondary school in regional Victoria. I'm also completing my Master of Arts (Creative Writing) at Monash Uni.

[ilearning](#)

Peter Allen: I've been teaching using technology and flexible learning techniques since 1992. I teach computing subjects at TAFE in South Australia. I'm interested in blended mixed mode learning and technology-enhanced learning. I am an early adopter of desktop video, and audio. I teach full time, so I don't get much chance to do the conference circuit. :)

[i-Anya](#)

Angela Thomas: I lecture in English Education at the University of Sydney. My research interests include identity, feminism, media, digital literature, new literacies and young people online. Some of my publications are [here](#) but my ongoing thoughts are dumped [on my blog](#).

[TomMarch's ozBlog](#)

Tom March: I've been nurturing the [WebQuest](#) since its first days and have developed software like [Filamentality](#) and [Web-and-Flow](#). My current interest is to promote [ClassAct Portals](#) as a way for all students to engage in Real, Rich & Relevant learning.

[Mr P's SMART Board](#)

John Pearce: One Victorian teacher's record of the implementation of a SMART Board Interactive whiteboard into a primary school classroom. For science based links you might like to look in at the [Simply Science FURL](#). If you are interested in science education you might also like my [Simply Science](#) site.

[The Open Classroom](#)

Jo Mc Leay: I am a teacher of English in a secondary school in Melbourne and completing a Masters of Education by research.

[Teach And Learn Online](#)

Leigh Blackall: I teach people how to use the internet for teaching and learning. I live in the Blue Mountains NSW, with my beautiful partner Sunshine and our lovely dogs Mistisa and Black One. I create educational resources including websites, movies and animations, print outs, strategies, and training. You can find out more about my work at [leighblackall.wikispaces.org](#)

[vlog 3.0 \[a blog about vogs\]](#)

Adrian Miles: Adrian Miles teaches the theory and practice of hypermedia and interactive video at RMIT University, Australia. He has also been a senior new media researcher in the [InterMedia](#) Lab at the University of Bergen, Norway. His academic research on hypertext and networked interactive video has been widely published and his applied digital projects have been exhibited internationally. Adrian's research interests include hypertext and hypermedia, digital poetics, and the use of Deleuzian philosophy in the context of digital poetics. He also explores the affordances of new technologies for networked literacies and the development of new knowledge objects in pedagogy. RMIT City Campus, Melbourne, Australia.

[This Teaching life](#)

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Scott Bulfin: I'm a teacher/doctoral researcher at Monash University in Melbourne. My research interests include literacies in and out of schools, literacy and technology studies, professional learning, socio-cultural theories of education and all the funny things young people do! Stuff like that. More info [here](#) or [here](#).

[Wax Lyrical](#)

Kate: I am completing a Master of Science, researching blogs and online learning. By day I am an e-learning administrator in Perth.

[Bill Kerr](#)

Bill Kerr: Bloggers are writers who are using the next dominant medium, just being digital.

[ICT Integration in the Classroom](#)

Mrs C: A collection of thoughts, theories and reflections regarding the use of ICTs in the classroom.

[Blog, Blog, Blog](#)

Kylie: I teach basic IT and office skills adult education classes using Ubuntu Linux. I work for Teen Challenge as well as running my own training business and home schooling my teenage daughter.

[Southoz E-learning](#)

Vonnie: Exploring the potential of blogs, feeds and podcasting in education. Interested in emerging technologies; Web2.0 tools including social bookmarking for collaboration and professional learning.

[Plakboek:Scrapbooking online](#)

Roland Gesthuizen: Learning Technology Coordinator and IT Teacher. Working to support a range of ICT initiatives. leading a team of highly motivated and talented computer support staff. In charge of a student computer games club and enjoys webcasting, podcasting, blogging and using Moodle. In a previous life was a Research Scientist with ICI Australia. Interested in a swag of issues related to Computers and Education.

[Waraku Education](#)

Wara: Ideas, experiments and observations as they occur [and I have time](#) relating to teaching and learning in a secondary school – special focus on ICT.

[Community Computer Recycle Scheme](#)

Wara: "Community Computer Recycling" is operated by Grant High School to provide free computers (including software and basic training) to community organisations and people in need in our community. Students in the computer technician class gain practical skills through this program. More information at the CCR [website](#).

[Teaching Generation Z](#)

Graham Wegner: An Adelaide based Aussie educator involved in technology leadership at his school, always looking to learn and discuss breaking issues. Also contributes to [ActivBoarding](#)

[Live and let Learn](#)

Michael Nelson: Currently facilitating a web-design class (see [Design Websites](#)) at TAFE in the Blue Mountains NSW. Encouraging learners to learn themselves with a mix of blogging/newsfeeds together with our class activities. I try to reflect on my own learning at [Live and let Learn](#).

[Jo Murray](#)

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Jo Murray: Jo edits the [Knowledge Tree e-journal](#) and mentors in learning object design and e-facilitation through [Pelion Consulting](#). Recent jobs include the [E-resources Kit](#) for communities Here's my attempt at a linked [click through map](#) of Australian [flexible learning blogs](#) which can be edited if you have Cmaps software but this wiki is a MUCH better idea. Let's move on.(Grin).

[LearnDog](#)

Mike Seyfang: Mike is programme manager for this interesting new venture. We will try to help kids through recognition of their vocational skills. Early days yet – to follow our progress subscribe to [LearnDogPup Blog](#).

[Jason Plunkett](#)

Jason Plunkett: An ongoing conversation about the various aspects of eLearning, issues new technologies and the impacts these have as they are incorporated into the classroom.

[Fatima's Teaching Lab](#)

Fatima Measham maintains a chronicle of her journey as a novice secondary educator in Victoria, for the purposes of reflection, improvement, and the preservation of sanity. And to give more experienced teachers a laugh and a sense of nostalgia.

[teaching and learning](#)

Warrick Wynne: I am Director of Learning and Curriculum in an independent girls school in Victoria, teaching Senior English and interested in the effective utilisation of technologies in learning, esp. tablet pcs, blogs, podcasts and all things Web 2.0.

[web2learn](#)

Brad Hicks and Kelly Anderson: We are high school teachers in Western Australia, teaching Business and Computing and English respectively. We are interested in trying Web 2.0 technologies as tools for student learning. We are documenting our experiences to help others and hopefully also gain some input from those who are already using these technologies.

[PD Spot](#)

Garry Chapman: I am Assistant Director of Curriculum at an independent co-educational school in Melbourne. Most of my work involves support for curriculum development in the middle years, from upper primary to lower secondary. Our students have their own notebook computers. I have set up this blog to document and share some of the things I have been doing with teachers and students.

[TLnewsau](#)

Jill Ball: A novice blogger, I am the Head of Information Services at an independent co-educational school in Sydney. My blog records resources used in my personal learning journey, provides links to news items and lists resources of interest to other Teacher Librarians in Australian Schools.

[head first in at the deep end](#)

Hg: My blog contains collected ramblings on my great leap into teaching... After an exciting education, provided by both university and the world at large, I decided I might just be grown up enough to teach... I finished my dip ed in secondary school science and health and now find myself in outer suburban Melbourne teaching disabled 6 year olds in the primary area of a special school!

[Technology in the English Classroom](#)

[8 Orange 06](#)

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CDQ: I am a Drama, English, and Entertainment Teacher in a NSW secondary school. My blog is a page my students visit to get weekly, and sometimes daily tasks. Mainly for creative writing, and exploring different text types. Each student has a companion blog on learnerblogs.org. The first site is for my 2 classes I see once a fortnight, and the second site is for my full load of Yr 8 who are desperate to be “blogging”. Some information and tasks are doubled.

[Holistic and Integral Education](#)

Roger Stack: Teaching in Hobart, Tasmania – Yr 11/12 VET IT, Journalism. Management roles in Curriculum, ICT, Holistic Education Network Tasmania (HENT).

[Flexible Learning and Educational Design](#)

Marg O’Connell: Reflections from an educational designer, based in Canberra ACT, on flexible learning and educational design in a changing world.

[consequently.org](#)

Greg Restall: An academic in the [Philosophy Department](#) at the [University of Melbourne](#). This site is my personal blog, with sketches of ideas, drafts of papers, pointers to published research, and links to online resources for my teaching.

[\(Re\)writing English](#)

Mark Howie: Critical reflections on public commentary about the teaching of English and literacy. I am a secondary English teacher from Sydney, NSW.

[English Stories](#)

This Blog has been created to provide a central collection of the public stories that are told about the subject English. It will hopefully serve as a reference point for anyone interested in keeping up to date with the stories that are being published and publicised, as well as provide a space for people to comment on the stories and contribute to strengthening the support for a vibrant, relevant and inclusive English curriculum.

[heyjude – Making fortunate discoveries](#)

Judy O’Connell: As an educator and information professional I am fascinated by emerging technologies, the development of Web 2.0, and what this all means for schools and school libraries. This blog was created specifically to engage in reflection, learning and social networking. Currently I am an Education Officer with Catholic Education, working with 55 primary and 22 secondary schools in the Western region of Sydney. I am also Vice-President (Association Relations) of IASL, the International Association of School Librarianship.

[Bibliosphere News](#)

Judy O’Connell: This blog is about news, views and events for school libraries. Though its main audience is Teacher Librarians, Catholic Education, Parramatta Diocese, it also provides information and ideas about learning and teaching in a knowledge society that is relevant to TLs and literacy educators anywhere in Australia.

[Al Upton and the miniLegends](#)

Al Upton: This is my class blog. A multi-purpose blog – class use, Game Maker resources, blog resource and development. I’m a teacher at Glenelg School (Adelaide, South Australia) with a passion for professional learning, computer games in education and exploring the role of emerging technologies in education. My focus is catering to busy teachers with time commitments, crowded curricula and often elusive lives of their own. The miniLegends are Year 3 students ~ 8 and 9 year olds. Look for their blogs amongst the meerkats in the image header. Other links - [‘Our Game Maker Resources’](#) and [‘Our Classroom Environment’](#)

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[cclearning](#)

Al Upton: This is my blog for educational dialogue. Currently being used to record and comment on workshops and conferences I attend and present at. I'm looking to make more contributions to the edublogsphere. Will also use this blog to compare wordpress.com and edublogs.org and for class use where needed e.g. [RockYou](#)

[Computers and 21st Century Eduk8n](#)

Joseph Papaleo: "papajo" I am an IT and Mathematics teacher in Melbourne. I haven't been blogging long, but have been using private wikis in my classrooms. I am interested in bringing technology into my classroom and write about my ideas on my blog. I hope to turn as many of these into reality in the near future. My podcast site is at: [Joseph's podcast](#)

[Wellbeing Wonderland](#)

Lynette Corletto: This blog is a chronicle of the development of my understanding around wellbeing and adolescence as I endeavour to support the teenagers I work with in my role of Student Counsellor.

[Our Class 2007](#)

Rosa Ochoa: I teach English as a Second Language at St George TAFE, Sydney, Australia. I've got a class blog, [Our Class 2007](#) (with links to my previous class blogs, like [Our Class 2006](#)), where I set weekly work for my students, a podcasting blog, [Sydney's People Podcast](#), where I post interviews with people from Sydney as listening practice for my class, and [Let's Talk](#), a podomatic blog where I publish podcasts recorded by my students and where we conduct p2p exchanges (facilitated by dekita) with students from overseas. We are also learning photostory making and we keep a [wiki](#) with students from Liverpool TAFE, which they love!

[SoulCradler](#)

This blog is set up as an aid to my personal reflection as I start out a teaching career in country Victoria. I am an English and SOSE teacher, and teach classes at year 7, 10 and 11. I am interested in utilising the growing blogging/podcasting/wiki-ing community to bring some of these tools into my classroom.

[first person, secondhand, third dimension](#)

Linda Shardlow: I teach mathematics at a secondary school in Melbourne. I am interested in discussing and reflecting on curriculum approaches to the teaching of mathematics, my own practice and that of others in order to provide learning experiences that engender authentic thinking and deep understanding of concepts in my students.

[RenewEd](#)

Peter Wagstaff (Wags): Thoughts, experiences, and ideas from a passionate university teacher, who doesn't like the word "lecturer". He's a believer and active user of ICT in education, and is eagerly developing an in-depth understanding of the needs of today's Gen Y learners.

[My Other Blog](#)

Hi, my name's John Pearce and I teach at a primary school in Geelong, Victoria, Australia. My Other Blog is where I will put my musings and links related to the use of ICT especially related to blogs, wikis, podcasts, RSS, Skype, Social Bookmarking and other related technologies.

[Web 2 Wanderings](#)

I invite you to visit my blog, which is my exploration of Web2.0 and its application in educating high school students, especially in HSIE (SOSE). I am studying for a Masters in Education and felt the best way to learn

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about the many web tools now available to our youth was to try them out myself. My only problem is that I spend so much time exploring that I don't have much time to blog! Karen Mann Mid North Coast NSW

[Videoconference Tips & Techniques](#)

This is a blog with all sorts of information about videoconferencing – mostly about its use in education. I'm Carol Daunt Skyring from LearnTel & I work with teachers & lecturers in how to teach effectively using videoconferencing. I post regularly with tips, resources and events about videoconferencing. I'm in Brisbane, Queensland.

[mydigitalclassroom](#)

Hi, my name's Mark Pilson and I teach English and SOSE to students in the Middle Years, as well as being the Literacy Coordinator. I teach at a secondary school in Melbourne, Victoria. I use IWBs extensively in my class and my blog is a series of reflections about the classroom and various PDs I have attended.

Mobile Technology in TAFE web sites

[Mobile Technology in TAFE blog](#)

[Mobile Technology in TAFE wiki](#)

[Mobile Technology in TAFE podcasts](#)

My name is Sue Waters and I have been sharing my experiences with Web 2.0, e-learning and m-learning (mobile learning) since early 2006 through my **Mobile Technology in TAFE** web sites

Russel Montgomery

[Braindump](#)

[heymrmont](#)

I teach middle school maths in Perth Western Australia

I am a disruptive innovator and at the moment I am a digital pioneer (warrior/champion/fool) at my school.

I created braindump as a split off from the blog I was using to keep parents informed about activities at school. Colleagues were unhappy with me doing a brain dump with parents. They felt it needed to be more professional. So I created [braindump](#) to pour my thoughts into. As it has turned out, I am now lobbying intensely for e-learning in my school so I am not using it so much as a braindump but as a lobbying tool. I still keep my parents blog at [heymrmont](#). Of course having to divide my attention between the two blogs means that I don't keep either as well as I would like. But I'll get there. If you are interested, I also keep a personal blog that has a mixture of stuff including some stuff about e-learning at [pilgrimage](#).

[Thinking 2.0](#)

My name is Cindy Barnsley and I teach English and Modern History (years 9-12) at a boys' school in NSW.

<http://339web.blogspot.com>

Pat Wagner. Through the Australian-owned educational consultancy company A.U.S.I.E., I have developed a partnership with a Bronx middle school. I work with them to coordinate not only their professional development, but also aspects of school improvement. I work mostly from my home in Queensland and then visit the school three times a year. The online work is going incredibly well. You can see the results on the Celebrations Pages – <http://celebrating339.blogspot.com> – showing what we've been up to in the first half of the American school year.

[ejourneys with generation Y](#)

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Hi I am Anne Mirtschin and I teach Information and Communications Technology to years 5-12 at Hawkesdale P12 College. I am passionate about using the emerging technologies, particularly web2.0 to enhance learning outcomes for my students in all subject areas. My favourite applications include [podcasting](#), digital storytelling, digital moviemaking, (I am much on teachertube), being involved in global projects and videoconferencing with skype. I have several blogs: one on [my ejourneys](#), my [globalteacher](#) work and my students [backyards](#) My [wiki](#)

[Technoscience](#)

[VCE Biology](#)

[VCE Environmental Science](#)

Hi, I am Britt Gow, also from Hawkesdale P12 College (SW Victoria), where I teach (mostly) Science, Biology, Environmental Science and Maths. My blogs are very practical, student-orientated sites with links to resources and celebrations of student achievements. I enjoy using TeacherTube, Voicethread, twitter, wikis, Flickr, Skype and delicious.

Exploring educational technologies in Vocational Education and Training (VET)

[Cafechat's weblog](#)

[Simon Brown](#) in Brisbane, managing apprentices who are learning stonemasonry skills at SkillsTech Australia. Using [YouTube](#), [Ning](#), [Twitter](#), [Flickr](#) and [del.icio.us](#) with my students. Started [Cafechat](#) with a group of friends after [Alan Levine](#) visited Brisbane, reflecting on our multimedia adventures as [Nema Szondi in Second Life](#).

LisaHillSchoolStuff

<http://lisahillschoolstuff.wordpress.com/>

Lisa Hill, Mossgiel Park Primary teacher-librarian with a blog focussing mainly on children's literature and primary library but also exploring Web 2.0.

I also maintain the Mossgiel Park PS library <http://mppsliblog.edublogs.org/> and school blog <http://mossgielparkps.globalteacher.org.au/>.

I'm just getting started with a wiki for our school's staff manual....

[ICT in the Classroom](#)

My name is Suzanne Arnott, my blog was originally created to record my journey during Teacher Professional Leave in 2006-07. It has since evolved to record my continuing journey. I also created a wiki for the TPL project [ICT Powertools](#).

I have developed a self paced project to help teachers become more familiar with Web2.0 tools, to try and get them more engaged and wanting to use them. [The Redback Project](#).

I am currently eLearning leader at Sandringham College in Victoria

[jennip's Journey's](#)

Hello my name is Jenni Parker. jennip's Journey is the gateway to my Blogs. I'm relatively new to blogging however over the past month or so I've been getting lots of practise! The blog I am currently working on is focused on Connectivism, the CCK08 MOOC (Massive Open Online Course). Through this course I am making some wonderful "connections" and learning lots of new stuff.

I live in Perth and I teach computer software and training and assessment (TAA). I have just accepted a contract to write, develop and deliver an online course on Workplace Training for the Business & law faculty at Edith Cowan University (ECU).

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[Introduction voiceThread](#) – image and audio introduction. To add an introduction about yourself, simply click on the comment button and select your preferred method, phone, video, record (audio) or type (text). I look forward to meeting you. (This voicethread was created by Jenni Parker on 19/11/08).

Keith Lyons

[Clyde Street](#)

I live in New South Wales and am keen to explore the use of ICT in education and sport. Most recently (November 2008) the blog has been my forum for discussing [CCK08](#) (Connectivism and Connective Knowledge). I administer a [wiki](#) for the canoe slalom community in Australia.

Brave new world

<http://tsheko.wordpress.com>

Tania Sheko: As a teacher librarian and previous teacher of English and LOTE in secondary schools, my interest is in engaging students in lifelong learning using emerging technologies. This blog began as a process journal of my Web 2.0 course through SLAV, and now it's a place for me to document my learning, ideas, thoughts and finds, as well as hopefully attract other people's comments.

[Visual Arts@Taylors Lakes Primary School](#) is the Art Classroom blog I began in mid 2008. Yvonne Osborn is my name and I have been a Primary Visual Arts teacher for 22 of my 33 years of teaching. I currently teach part time at Taylors Lakes Primary School which is in Melbourne, Victoria. I enjoy ICT as my second passion and during 2009 I hope to help more teachers begin blogs and personally learn more by networking and sharing. I am also hoping to get an interactive whiteboard in the Art Room. I live in hope.

[Sui Fai John Mak](#)

John is currently employed as a Teacher at the Sydney Institute of TAFE NSW. He holds a Graduate Diploma in Vocational Education and Training, a Master of Science in Engineering- Industrial and Manufacturing Systems Engineering as well as a Diploma in Industrial Management. John has been in his present work position since 2000. Prior to this he was a Teacher of Industrial Engineering, Southern Institute of TAFE NSW; Senior Lecturer and Lecturer (Deputy Head), Department of Manufacturing Engineering, Vocational Training Council; and a Factory Manager with over 25 years experience in management positions within the manufacturing industries and education. I have attended the [CCK08](#) Connectivism and Connective Knowledge in 2008. In 2009, I would like to share my learning experience with other educators and contribute to the research and development of ICT and Web tools, e-learning, blended learning and open education in Higher and Further education. You are welcome to visit my blog on <http://suifaijohnmak.wordpress.com>