Premier’s Copyright Agency Creativity and Innovation Scholarship

Digital collaborations for sustainability: Innovative and practical models   
of practice utilising virtual collaboration

Patrick Spiers

Field of Mars Environmental Education Centre, East Ryde, Sydney

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Scholarship goal

My central goal was to investigate how successful virtual collaborations balance a technical virtual experience with a student centered real-life experience.

What is virtual collaboration and why is it important?

*Virtual collaboration* is a method of collaboration between virtual team members that is carried out via technology-mediated communication.Virtual collaboration may be synchronous (where information and ideas are shared instantaneously), asynchronous(where any exchange is less than simultaneous) or an integrated combination of both.

If Australians are to prosper in the upcoming 21st century it will require them to work smarter and harder to negotiate all the complex challenges brought about by technological changes, globalisation and environmental issues.

Virtual collaboration skills are important because the teamwork needed to effectively tackle both the everyday and the big picture challenges facing our society often requires multiple people interacting creatively, in different ways, and sometimes at different times and places, in order to innovate and develop the unique solutions needed.

The various processes and methods that make for successful virtual collaboration are therefore key skills for our schools and workplaces to prepare for the future. This can be seen in the outcomes, content and general capabilities of the NSW Board of Studies syllabuses for the Australian curriculum, which by their own definition “encompass the knowledge, skills, attitudes and behaviours that assist students to live and work successfully in the 21st century.”[[1]](#footnote-1)

What does virtual collaboration look like in the classroom?

Virtual collaboration for the classroom is a blending of modern interactive technologies with pedagogies that allow for meaningful student centred collaboration.

The *technologies* (often called “unified communications” in the business world) include:

* + Dedicated Video conferencing classroom setup installations, (eg: NSW DEC Interactive classrooms)[[2]](#footnote-2)
  + Bridging infrastructure that allows high quality, configurable multipoint VC connections that can be scheduled, recorded and even streamed to the web for anyone to watch as a passive audience (eg: NSW DEC IT support staff and bridge)
  + Web based data collaboration software, (eg: Google docs, Google forms, Evernote)
  + Social learning networks and blogs, (eg: Edmodo, Bloged, discussion forums, Twitter)
  + Desktop sharing / web conferencing software that may use webcams, (eg: Adobe connect, Smart Bridgit)
  + Learning management systems and online courses, (eg: Moodle, iTunes U)
  + Low cost web-based video communication software (eg: Skype)
  + Other technologies such as cell phone voting, email and YouTube

The pedagogies are carefully planned to be student-focussed and to address the three dimensions of the NSW Quality Teaching framework.[[3]](#footnote-3)

A popular pedagogical approach is “project based learning” (essentially: Engaging students in a significant investigation), which is defined by Markham (2011) as, "Integrating knowing and doing. Students learn knowledge and elements of the core curriculum, but also apply what they know to solve authentic problems and produce results that matter. Project based learning students take advantage of digital tools to produce high quality, collaborative products.”

Scope and context of project

In Australia, we have often followed the advancements and trends set by educators in other countries when it comes to the deployment and application of virtual collaboration tools and other related technologies that support learning.  
In researching my project I talked to many people who gave anecdotal descriptions of how virtual collaboration applications evolve as the hardware and connectivity required is deployed into an educational system. A common observation was that the uptake and application of these technologies often comes in three or four distinct (and usually successive) “waves” characterised by distinct modes of use:

* 1. Distance education - where the technology is used to bring geographically separate teachers and students together in real time.
  2. Virtual outreach programming from “Content providers” - when the number of schools who have the capability to connect virtually reach a critical mass many cultural organisations with community outreach goals will invest in the hardware and educational staff needed to offer scheduled digital outreach sessions, usually for a fee.These experiences are often marketed as “virtual excursions”
  3. Project based collaborations between classes, who are not necessarily separated by great distances, but are joined by their shared learning goals - these student centred projects often employ a sophisticated blend of synchronous and asynchronous collaboration methods, and may take place over several weeks.
  4. Students developing their own outreach sessions - effectively becoming content providers themselves.

I decided to focus my project on the third wave, as these sorts of sophisticated virtual collaborations are only just beginning to happen in a piecemeal way in Australian schools and have not been well articulated to the public. It is far easier to demonstrate a slick-looking VC outreach session with a trained educator delivering a structured lesson than it is to demonstrate a successful student driven collaboration session. For an adult viewer conditioned by television and workplace teleconference meetings a student collaboration can be very raw to watch - and the syllabus outcomes are not always easy for an outsider to immediately identify during the live experience.

Aside from my own directions my project goals were in direct alignment with the bigger picture in NSW education:

* The continuing goals of the “Interactive classrooms” element of the NSW connected classroom program.[[4]](#footnote-4)
* Targets from the Department of Education and Communities, Northern Sydney regional plan.[[5]](#footnote-5)

Significant learning

**Abilene, Texas, USA:**

In Region 14 of the Texas education agency, some 250km west of Dallas-Fortworth, I was lucky to have as my guide Mr Tommy Bearden, a High school principal turned regional virtual and distance learning consultant who had a strong, down-to-earth, community-minded vision for how virtual collaboration could be supported on a comparative shoestring for the regional and rural students of the Region.

The standout experiences in region 14 were:

* + Discussing with staff the regular VC connections between students at Merkel elementary school with similarly aged students in the United Kingdom. As the students were only 5-6 years old the synchronous VC connection session only lasted for around 20 minutes and there was a clear structure in place to keep the exchanges focussed. These brief sessions were, however, supported by a considerable amount of prior asynchronous exchange by email.
  + Meeting Thelia Lisle, the brains behind the “Cotton, plant of many uses” project at Stamford High school. This project involved high school students developing and presenting their own VC outreach sessions consisting of well-crafted interactive lessons on the sociology and science of cotton (an important local crop) delivered via video conferencing to elementary/middle school students all over North America. These paid sessions were available for booking on the CILC website (see page 7) and were more than just an interactive audiovisual exchange, the experience of the participating classes was also resourced with physical props in the form of cotton bolls which were mailed out beforehand. This was combined with a web-based asynchronous learning space used by participating students to follow up on the experience.
  + Observing 8th grade Merkel junior high school students who were fine tuning a VC presentation with a class of 3rd grade students elsewhere in Texas. This session was a practice run for the national *KC3* virtual collaboration competition.While the presenting students had a good basic skill-set for organising and running their own video conference, they were still grappling with how to tune their presentation to the learning needs and concentration spans of their younger audience.

These students made efficient use of printed maps and other resources shown on a document camera plugged into their VC system. While this is a fairly basic method compared to the use of a data collaboration channel such as Bridgit2 it was great to see it used so well by the students to quickly convey spatial information to their audience.

**Anchorage, Alaska, USA:**

At the 2013 Alaskan society for technology in education conference I was able to interview many teachers and educational technologists from various Alaskan state school districts, many of which have *strategic technology learning plans* that sit within their Regional plans. These plans clearly articulate their district’s goals for the use of virtual collaboration methods as everyday pedagogical tools in their districts’ unique educational and community contexts, (these are remote communities with a mainly native Alaskan population). These goals inform a comprehensive suite of professional development activities required for all staff.

The collaborative technologies chosen include a mixture of Video conferencing, web conferencing, server based learning management systems, cloud based data collaboration and easily accessible “back channels” such as SMS and twitter.

I met many experienced educators in the later stages of their careers, hitherto reluctant to embrace technology in their classrooms, who had been introduced to virtual collaboration methods through targeted professional learning. They commented that they felt they could once more grow rapidly as teachers and spend more time on the “how and why” than the “what, who, when and where” in their lessons. When aligned to the elements of the NSW Quality Teaching model 3 this statement translates to mean that virtual collaboration allows a teacher to plan for greater intellectual quality and significance in the classroom.

Many teachers and technologists had come to realise that most of their digital documents, resources, and even their own school data from earlier years were becoming increasingly difficult to access as proprietary software versions began to become incompatible with more current technologies. Essentially, these legacy systems made much of their digital teaching and learning materials from prior years simply unavailable to use without re-investment with the same software vendors for upgrades, or data conversion.

Accordingly, in the last few years many districts have replaced closed code, proprietary products and tools previously used by all departments and schools in the district with mostly Open Source, web based alternatives.

**Waco, Texas, USA:**

Whirlidurb is a small VC content and professional development provider that delivers a staggering array of learning programs from across almost all subject areas as well as some groundbreaking teacher professional development programs.

After considerable discussion with content director Roxanne Glaser I was left in no doubt that without a prescriptive cultural context or specific outreach message Whirlidurb had been able to give free reign to its teaching staff to develop programs in line with their own passions. Their deep personal commitment to this style of education had seen the development of a large catalogue of high quality virtual lessons that were delivered with energy and pizzazz, as well as some visionary teacher professional development courses.[[6]](#footnote-6)

I would recommend that any Australian cultural organisations that are, or are considering, delivering VC outreach programs should, wherever possible, keep the scope of their outreach message broad enough so that VC education staff have room to create and grow professionally, and, in doing so, find their own passion and voice. This is guaranteed to engage and develop empathy with participating students and more energy into their programs.

**Edmonton, Alberta, Canada:**

At Queen Elizabeth High school I visited the Centre for Global education run by Terry Godwalt. Ostensibly a teacher with a job description of “Project based learning co-ordinator”, Terry’s passion for socially relevant projects that resonate with Canadian youth has informed a range of powerful programs that make bold use of an amalgam of virtual collaboration technologies.

I was able to sit in on a live session that wove together the following experiences for a range of secondary audiences:

* + A Video conference was run by a host (Terry) in a classroom with a physical student audience that was shared between 5 other interactive endpoints: 4 high schools and a large youth conference.
  + At the same time, this VC was simultaneously being streamed to at least two non-interactive boarding school sites in Asia where students were watching after dinner.
  + All students were able to engage with each other on a Twitter “backchannel”
  + The main event was a Q and A with a youth activist in Yemen on a Skype call patched in to the VC
  + All of the above was supported by an asynchronous online workspace[[7]](#footnote-7) with pre and post VC activities and chat spaces that had effectively worked as a “springboard”, that is, it had brought the students into the VC with a robust understanding of what was happening and why it was important.

What I found striking was that, compared to a NSW connected classroom, this session had a very simple hardware setup at the presenters endpoint where a laptop running Skype sat on a table next to the host which had the portable VC camera and microphone trained onto it. Even when the Skype call lost fidelity due to the poor bandwidth in Yemen the host was able to repeat the student’s questions.

Any issues with picture and audio quality were well and truly outweighed by:

* + The powerful nature of the Yemeni activist’s personal stories,
  + The presentation skills of the host in anchoring a long, complicated session that didn’t always go to plan.
  + The Asynchronous workspace (link) that had brought the students in with a good understanding of the session’s background and ready to ask meaningful questions.
  + Follow-up activities and forum discussions that allowed the students to transfer their knowledge into action and make personal meaning of the experience.

**Indianapolis, Indiana, USA:**

The Centre for interactive Learning and Collaboration (CILC) is run by a team of passionate and experienced consultants who help develop, support and evaluate video distance learning programs and community collaboration projects in North America and worldwide.

The CILC website is well known, it includes an impressive catalogue and booking service for VC content provider programs and VC collaboration projects. I was most interested in their KC3 (Kids Creating Community Content) VC contest which, “challenges high school and middle school students (to) research, develop, and present community content through various technologies and connect with (other) classes world-wide through videoconferencing.”[[8]](#footnote-8)

For any teacher motivated enough to inspire their class to take part, the rewards were worth the considerable effort, primarily this was in the form of high levels of student engagement. Teachers commented: “Students had to dig deeper to really understand the in depth content to share it with the other class”, “The project required metacognition - the students learned how they learn” and, “They learned that it’s one thing to know something, but it’s another to be able to communicate your ideas effectively to someone.”

A student presenter had even opined, “I didn’t realise that teaching was so hard!”

I was interested in how CILC had supported teachers and students who had taken up this challenge. This included targeted and sequenced teacher professional development and support, project planning templates and advice, live coaching and a network of willing audience schools who were happy to give feedback on presentations that were “in development” (As I had seen at Merkel Junior High – page 6).

After a long day of discussion with Tonia Carriger and Bev Mattocks I was both wowed by their deep experience and passion as well as gratified to realise that the resources, templates and feedback channels that I had developed alone for the annual “Greenspeak” student collaboration event were very much in line with the best practice methods that had been developed at CILC.

**Shrewsbury, Shropshire, UK:**

Graham Moore is the Learning and Skills Development Officer of the Lifelong learning team at Shropshire Council. It was informative to see how he and his team were able to develop VC opportunities for schools and cultural organisations in Shropshire during times that were uncertain owing to council budgetary challenges and a shift in how some schools were controlled and funded.

His adaptable team was setting up flexible models to support VC in schools and grow VC outreach capabilities in regional museums.

Some of the Schools in Shropshire had an impressively mature track record for VC integration, for example, Sian Squire at Shrewsbury Sixth Form College organised a VC exchange with a school in Northern France, about the poet Wilfred Owen, “who was born in our town and died in theirs.”

Graham is also a core member of the UK VC partnerships group which has been set up with JAnet to encourage partnerships between virtual education in the UK and abroad and discuss experiences and best practice in using videoconferencing in education.

**Swansea, Wales, UK:**

Phil Davison from the [Welsh Video Network](http://www.wvn.ac.uk/en/aboutthewvn/) (WVN) Support Centre was my guide.WVN exists to encourage and facilitate increased adoption of videoconferencing across Welsh universities and high schools. The support centre is managed as a not for profit subscription service by Swansea University in partnership with Bangor University. It may soon be working with the health sector under a shared services in public sector model.

Phil had a profound understanding of how VC technologies need to be set up and supported so as to support effective learning, by keeping the human transactions as real as possible. It was illuminating to see how well the WVN system worked, and the sorts of bold collaborations that can be undertaken by schools when supported by such a highly competent support network

**Northeast London, UK**

Mina Patel is a Video conferencing consultant with the boroughs of Redbridge and Havering, she has a strong vision of how VC should fit into the everyday activities of English schools. This vision is not limited to the classroom but also takes into account a schools administrative bottom line. This can be seen in her [VC for learning matrix](http://www.scribd.com/doc/86112341/VCfL-Matrix-Final) which is a self-assessment tool for schools to measure progress toward the implementation of VC as a school improvement goal, both as a learning tool and an efficiency solution.

Mina introduced me to the staff at the Scargill Infant School in the London borough of Havering. This school has won awards for the mature and differentiated ways they run their VC program. This is in part due to the actions of the head teacher, Kath Keeper, who has a strong vision, not dissimilar to that of Tommy Bearden in Texas (page 5). She wants all students, however young, to regularly communicate using the technologies that she believes will be a standard part of the workplace of the future. She wants each child to experience collaborative learning about, and with, another school community.

Finally, she had recognised that, with the support of the National JAnet videoconferencing service she is able to do all this while saving the school money.

The Scargill Infant School VC journey started many years ago with the creation of an ICT integration team which had a clear mandate for change. This experienced team then took up the challenge of integrating VC into their everyday learning. They now plan for each class to take part in at least one substantial VC collaboration every year with students of a similar age. This collaboration may span several weeks. Every class at the school has its own partner class, whether local, national or international.

I also visited Oaks Park High School in the borough of Redbridge, where I met learning resource centre manager Linda Hayes. Amongst other things, we discussed the benefits of a collegiate VC network that had been set up for relevant staff at various local schools. These meetings were held not virtually, but in person, and were regarded as indispensable for the continuous integration of VC in Redbridge. They enabled hands-on exchange and celebration of successes first-hand.

This highlighted the fact that virtual collaboration is not always the perfect solution for professional networking. Rather, it has its place alongside physical collaboration and the two methods enrich each other when integrated.

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1. BOS Syllabus Cross-curriculum priorities that relate strongly to virtual collaboration:

   * Information and communication technology capability
   * Intercultural understanding
   * Personal and social capability
   * Work and enterprise

   [↑](#footnote-ref-1)
2. The NSW DEC connected classrooms project equipped every NSW public school with one “Interactive Classroom” installation which included: an interactive whiteboard, video conferencing facilities, a PC with internet connection, preloaded lesson creation software and “Bridgit” data collaboration software) [↑](#footnote-ref-2)
3. The NSW Quality teaching framework defines three dimensions of pedagogy that have been linked to improved student outcomes:

   • pedagogy that is fundamentally based on promoting high levels of **intellectual quality**

   • pedagogy that is soundly based on promoting a **quality learning environment**

   • pedagogy that develops and makes explicit to students the **significance** of their work. [↑](#footnote-ref-3)
4. “The need for Connected Classrooms program comes from the demands of today’s students: It will facilitate wherever/whenever learning as students consume, remix and create knowledge.”

   The program is made up of three key projects: Interactive classrooms, Learning tools and a next generation education network. [↑](#footnote-ref-4)
5. “Schools use ICT learning tools, interactive technologies and ICT-based curriculum resources to engage learners, support innovation and enrich learning”“Schools engage with local community organisations to maximise support for every student including building opportunities for community-based learning.” [↑](#footnote-ref-5)
6. Roxanne Glaser’s [blog](http://vcrox.wordpress.com/20days/20-days-to-a-better-vc-coordinator) gives an idea of her passion for VC professional development [↑](#footnote-ref-6)
7. This workspace is located within the [TIGed website](http://www.tigweb.org/tiged/about.html) and it requires a logon and is moderated for child protection purposes. [↑](#footnote-ref-7)
8. A highly recommended video that showcases KC3 sessions can be viewed on [vimeo](https://vimeo.com/6323830) [↑](#footnote-ref-8)