

## Online project collaboration ... we still have a long way to go

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This paper presents the challenges involved for team members working on a research project from three different universities located in Melbourne and Brisbane. An advisory university was located overseas in Surrey, England. A variety of computer mediated technologies were used for online collaborations and discussions such as Skype, Elluminate Live!, Carrick Exchange and an Access Grid. Team communication also included email, phone and teleconferencing. The research software used to collect and collate qualitative and quantitative data were NVivo, Opinio and Excel. This paper discusses the complexities involved in online team collaborations and the extent to which technology was able to overcome the 'tyranny of distance' to facilitate discussions, examine information and advance investigations.

Keywords: online collaboration; virtual teams; telecommunications technology; research software; team building; computer mediated technology; research software

### Introduction

In this paper, we reflect on how a six member team, from three different universities located in Melbourne and Brisbane, selected and used communications technologies to conduct a qualitative and quantitative research project. In 2007, Swinburne University of Technology, Queensland University of Technology and Griffith University successfully secured funding from Australian Learning and Teaching Council (ALTC - then Carrick) on behalf of the Australian Collaborative Education Network (ACEN) to undertake the first large scale scoping study of Work Integrated Learning (WIL) in Australian higher education. The project aimed to identify, examine and map key issues related to work integrated learning across Australia and develop a framework for future projects.

Much of the educational literature on communication technology falls into several clear cut categories. There are an enormous number of articles on incorporating chat, blogs and web-based lectures etc. into the curriculum to enhance student learning (Maher & Hoon, 2008) as well as presenting a wide range of narratives on staff professional development (Hobbs, Williams, & Turnbull, 2006) and creating communities of practice (Klecka & Clift, 2005). However, there are a limited number of studies (Allen, Becerik, Pollalis, & Schwegler, 2005; Beekhuyzen, Cabraal, Singh, & Von Hellens, 2006; Larsen & McInerney, 2002) that feature the inner workings of a team using online technologies in the course of their work. These observations detail what happens when traditional face-to-face discussions are 'blended' with online collaborations using a range of communication technologies during a year long project.

In early planning it was agreed the team needed to be able to communicate with each other quickly, share resources collaboratively and discuss findings on a regular basis via 'electronic space' (Larsen & McInerney, 2002). To achieve this, the project team leaders undertook an investigation and trial to establish common collaborative communication technologies, through their respective Information Technology Services department (ITS). Basic communication tools such as phone, email and VoIP, were readily available via the three universities and an online collaborative tool, Elluminate Live!, was made available by ALTC (then Carrick). Serious consideration was given to addressing the needs posed by the overseas location of key mentors and advisors, in particular, colleagues at the University of Surrey. However, we soon realised that whilst each university had access to the same tool, it was supported by a different technology infrastructure and policy and did not function as well in some universities, as in others.

The team experimented with a wide variety of communications technologies and research software with mixed success. Specific issues are summarised in Table 1 but a few key discussion points are raised here.

The team was required to meet frequently online either as a group or as subsets of the main group (project leaders or project officers or combinations) using VoIP to discuss various aspects of the project. To achieve this effectively one of the first technologies trialled was Elluminate Live! as it not only allowed the team to communicate synchronously online using the audio and video facilities, but also enabled a collective 'view' of any project documentation under discussion. The program appeared to be designed to facilitate online class activities or large meetings with the central facilitator having 'master control' over all communication functions. Due to the complex nature of the work undertaken the project team the role of 'central facilitator' often needed to be transferred from team member to team member to aid discussion on different aspects of the work. The system could not cope with this dynamic. Some team members were able to see the document and hear the discussion at the same time, while others heard the discussion but were unable to see the correct page of the document until much later. Often the discussion had moved on by the time participants screens had repositioned themselves.

Over a period of time these visual and auditory malfunctions began to dominate meetings. Audio quality proved to be poor over the longer term and participants were forced to use the 'hand up' icon when they wished to speak to other team members during meetings. In addition, synchronous conversations were momentarily delayed as they were bounced back by Elluminate Live!'s main server located in the USA and meeting times needed to be pre booked which often hindered spontaneous meetings. We concluded that although this program offered an extensive range of tools, it required a greater investment of professional development time to fully utilise its features that we did not have so other technology such as Skype was investigated.

Skype, which is freely available from the internet, was found to be the most reliable and preferred method for communication within the project until one of the member university changed its policy and restricted access. Sound quality was generally good with minimal audio delay. Video connections work well except for peak periods during the day. However, Skype's video facility was used sparingly as its extensive use impacted on the programs audio functionality but not to the same extent as Elluminate Live!. The team also used Skype's online chat to communicate, particularly with those having technical difficulties while using other communication technologies such as landline phone, email or mobile text messages. Skype allows asynchronous messages and reminders to be left for team members. These messages pop up automatically when participants log on to the internet. This proved to be particularly handy in times of heavy email traffic as important messages can often get lost in mainstream email traffic. The team did experience frequent problems with individual microphones and headsets and often team members had limited bandwidth available when working from home. While these petty issues are not specifically related to Skype as a program, they caused project delays and took significant time from scheduled meetings.

One of the most successful communications technologies trialled was video conferencing which was accessed via the Access Grid system. Each team member from a different university, including colleagues from the University of Surrey in the UK, were able to see and hear each other on full size screens in real time. Participants commented favourably on the value of this type of computer mediated technology, however, logistically there were problems in co-ordinating time zones and team members who did not have this system had to travel to another university until it became time consuming and costly.

Unfortunately even the simplest communication systems were a struggle. The project experienced a series of problems when they used both their university PABX systems and a conference call facility run by a major telephone company (1800 number). One university had a phone system that only allowed a maximum of three to participate in a phone conference which meant that one team members had to drive to another campus to share a phone. The external 1800 company system proved to be compatible with two university's systems but not with the third and required staff members to be called in on an outside line. With all systems, there were difficulties adding team members into conference call lists as well as issues with dropping out, not being able to either hear or speak. A flurry of emails and text messages often ensued to sort out these problems. On one particular occasion, it took an hour to ensure that every team member was able to participate in a scheduled one hour meeting.

During the project extensive qualitative and quantitative data – interviews, focus groups and online surveys - was collected from a variety of locations around Australia. This required the use of digital recording devices and online survey equipment. Opinio, the online survey tool used by Swinburne,

**Table 1: Table of technologies uses; advantages, disadvantages and organisational issues**

Task	Online technology	Advantages	Disadvantages	Organisational issues
Meetings • Tasks • Discussion • Administration	Eluminate	<ul style="list-style-type: none"> <li>• Free to project</li> <li>• Lots of tool options</li> <li>• Ability for all participants to look at a document at the same time</li> <li>• Allowed a number of participants to join the discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Audio was patchy</li> <li>• Screen document out of sync with discussion</li> <li>• Problem with session + discussion control</li> <li>• Difficult to make changes to the document</li> <li>• Time consuming to login all 5 participants</li> <li>• Each participant had to ask permission to speak</li> </ul>	<ul style="list-style-type: none"> <li>• Booking with ALTC needed</li> <li>• Required prior training</li> <li>• User documentation not easy to follow</li> </ul>
	Skype	<ul style="list-style-type: none"> <li>• Video, conference + chat tools freely available - VoIP</li> <li>• Satisfactory audio, video and chat</li> <li>• Adding callers to conference easy</li> </ul>	<ul style="list-style-type: none"> <li>• Video use slowed down proceedings</li> <li>• Quality patchy when too many world wide participants</li> <li>• Problems with microphone and/or headset</li> <li>• Speed dependant on how many callers were on world wide</li> </ul>	<ul style="list-style-type: none"> <li>• Change in Swinburne policy shut down access</li> <li>• Used text messages or phone calls with login problems</li> <li>• Accommodating time zones + daylight savings</li> </ul>
	Phone Conference - Cisco	<ul style="list-style-type: none"> <li>• University supported</li> <li>• No additional expense</li> </ul>	<ul style="list-style-type: none"> <li>• Conferencing ability varied with universities</li> <li>• Time consuming to register each phone number and not lose callers already connected</li> <li>• Logging in sometimes took several attempts</li> </ul>	<ul style="list-style-type: none"> <li>• Often required campus re-location</li> <li>• Who was inviting whom into call conference</li> <li>• Need private offices, not suitable for open plan areas</li> </ul>
	Phone Conference - ATTP	<ul style="list-style-type: none"> <li>• external body managing login of callers</li> </ul>	<ul style="list-style-type: none"> <li>• expensive + needed prior booking</li> <li>• time consuming to add each participants</li> <li>• logging in sometimes took several attempts</li> </ul>	<ul style="list-style-type: none"> <li>• Need private offices, not suitable for open plan areas</li> <li>• Provide correct phone numbers</li> </ul>
	Access Grid	<ul style="list-style-type: none"> <li>• all participants could be seen and heard</li> <li>• real discussion</li> </ul>	<ul style="list-style-type: none"> <li>• International time zones + daylight savings Qld, Vic + UK. – 8 am for UK and 6 pm for Vic</li> <li>• Expensive</li> </ul>	<ul style="list-style-type: none"> <li>• One team had to travel to another university to use Access Grid</li> </ul>
Communication of Project Tasks, Activities, Updates	Email	<ul style="list-style-type: none"> <li>• Quick and familiar</li> <li>• University supported</li> </ul>	<ul style="list-style-type: none"> <li>• Problems with file version control</li> <li>• Lots of emails to process</li> <li>• File size restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• Misunderstandings arose</li> <li>• One state set up separate website to ftp large file sizes</li> </ul>
Curriculum Vignettes	ALTC website 'The Exchange'	<ul style="list-style-type: none"> <li>• Common repository with Australia wide access</li> </ul>	<ul style="list-style-type: none"> <li>• Fit in with existing website parameters, not our own</li> <li>• needed to register as group to download pdfs</li> <li>• lack of social interactive technologies</li> <li>• long beta testing and public access took a while</li> </ul>	<ul style="list-style-type: none"> <li>• work within evolving ATLC policies</li> <li>• website built in different stages + with limited collaborative input</li> <li>• impact of name change on files</li> </ul>
Storage + Access of project files	Quickplace	<ul style="list-style-type: none"> <li>• University supported</li> <li>• Free to project</li> </ul>	<ul style="list-style-type: none"> <li>• Patchy access between uni systems</li> <li>• Uploading not simple and straightforward</li> <li>• Complicated file directory structure</li> </ul>	<ul style="list-style-type: none"> <li>• Training needed</li> <li>• Update took place so logins and passwords ineffective for a time</li> </ul>
Surveys	Opinio + Excel	<ul style="list-style-type: none"> <li>• University supported</li> <li>• Free to project</li> </ul>	<ul style="list-style-type: none"> <li>• Access to all project members</li> <li>• Results published in excel spreadsheet</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulty in understanding raw data</li> <li>• Access + distribution of files</li> </ul>
References + Report	Word + Endnote	<ul style="list-style-type: none"> <li>• Central repository of references</li> </ul>	<ul style="list-style-type: none"> <li>• Incomplete full bibliographic information</li> </ul>	<ul style="list-style-type: none"> <li>• Shared useage not explored</li> </ul>

proved to be a handy and efficient tool but there were a few problems associated with its use. Access was only available from one university and profiles and passwords needed to be created and shared to enable collaborative construction and review of the surveys to take place. CSV files from Opinio had to be manually processed through Excel for analysis in SPSS. Furthermore, it was decided to use NVivo to collate and process qualitative data with central facilitation at QUT. The problems which arose were not so much to do with sharing and updating large files but in the coding of the raw data (Beekhuyzen et al., 2006: 26) as researchers tended to interpret the data differently.

The storage of research data also became an issue in this study as it did for Beekhuyzen et al (2006) because researchers were located in different universities across two states. Although, it was decided to use Quickplace as a central repository for drafts, reports, data and documents, it was with mixed success. The directory structure proved to be complicated, some team members had difficulty entering the site regularly while others had problems uploading files. Perhaps, using Blackboard/Vista may have solved some of these problems but indications are that similar issues would have arisen.

## Conclusion

Incompatibility between university platforms was a major barrier to successful online collaborative project management as was our naivety in believing that the technology was ready and able to conquer the 'tyranny of distance'. The various communication technologies we tried did deliver but not in the way we expected them to. Perhaps, we were ambitious in our technological demands and this led to misunderstandings, frustration and unnecessary duplication of effort and paperwork. Eventually the project adopted the 'fruit salad' approach to technology more out of practical considerations rather than 'good practice'.

For all its flaws, the communications technology available added value to the project and highlighted how online collaboration needs to be supported by face to face encounters to help forge effective communication strategies in a 'virtual organisation' (Larsen & McInerney, 2002). As Beekhuyzen et al assert (2006): "Resulting from the enormous impact the Internet has on the way we work, researchers have had to re-shape the process of learning and sharing knowledge within the team and outside of it."

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