

# Managing the managers: Collaborative virtual teams with large staff and student numbers

Kathy Egea

School of Computing and Information Systems  
Faculty of Informatics and Communication  
Central Queensland University  
Rockhampton, Queensland

k.egea@cqu.edu.au

## Abstract

Virtual teaming involving online presentations and peer reviews support the notion of collaborative student learning, whilst preparing them for the virtual work environment. However, implementation and administration of such teams, particularly when constraints include large numbers of multi-cultural students, within a complex multi-campus structure, needs careful planning and management.

This paper discusses the implementation features of an in-house dynamic web administrative package designed, in part to address the problem of management within a complex teaching environment, of assessment processes requiring virtual teams activities. An essential component of the teamwork is that students collaborate as small teams, and virtually interact with several other small teams. For some students, the study environment is totally virtual, for others face-to-face contact is usual. The web application also provide virtual management tool for the geographically disperse multi-campus staff. The paper discusses the achievements and the limitations of the current implementation, and finally future developments for the program design.

*Keywords* virtual team assessment, human computer interaction, multi-campus teaching, international student education.

## 1 Introduction

Academic and administrative management issues for coordinators of large classes across an array of Australian and international campuses have required academics to approach educational assessment requiring teamwork with caution. However, students are advantaged in such online environments when the pedagogical underpinnings support the course discipline, the course philosophy of design of usability evaluation and the industry framework of teams communications (Collings and Pearce, 2002) and virtual teams (Stough, Eom and Buckenmyer 2000).

Further, it can advantage staff by reducing their overall marking workloads (Roberts, 2002). In this case, the undergraduate course is Human Computer Interaction, with students attending in internal and external mode, with collaborative virtual activities of team seminars, team reviews and team reflection.

This paper presents a case study, which explores the issues of management of virtual team collaboration and assessment for large and complex class groupings. Following a brief discussion on virtual team literature, the case study is defined in terms of the educational setting and the assessment design history. The administrative package is described in terms of its features for each set of users: the course coordinator, the campus administrator, the marker and the student. A discussion of its suitability for management support of virtual staff and virtual teamwork is presented, followed by design improvement for the next implementation.

## 2 Virtual teams in industry and academia

The context of virtual teams in the workforce provides a rationale for the use of virtual teams in academic environments. Further, the generic skills of collaboration and communication advantage the student entering the workforce. These issues are elaborated further in this section.

Within the contemporary workplace, the concept of teams and teamwork is considered to be important in organisational structures since it supports positive relationships linking organisational effectiveness, working climate and client service (Lawler, Mohrman & Ledford 1992). Stough et al. (2000, p. 371) stress the value of teams to organisations “*because, increasingly, data shows that productivity, quality, and morale improves when teams are utilized.*”

Workspace that includes technologies, such as desktop videoconferencing, collaborative software, and internet/intranet systems, support a virtual work environment. A virtual team can include team members from a variety of locations and cultures, working across space, time and organisational settings (Johnson, Heimann, & O’Neill 2001, p.25). Alternatively, virtual teams may be teams that are competent with interpersonal communication via technology and as such may or may not be in groups separated by space, time and organisational barriers.(Jennings 1997).

Stough et al. (2000) address the competitive advantage that virtual teaming brings to the global setting. Skilling collaborative teams to work in a virtual environment adds considerable economic and cultural benefit to business organisations. Successful virtual team interactions are described by Stough et al. (2000, p.370):

*A key to success with modern teams involves the continual use of information technology to support team activities such as setting clear goals, coordinating and negotiating with others, planning and managing work processes, gaining decision-making skills, and aiding management skills like budgeting and scheduling.*

Such skills have been classified more recently as generic skills (see Snoke and Underwood 2001).

Meyerson, Weick and Kramer (1996) coined the term *swift trust*, a concept representing the behaviour found in teams that are temporarily formed solely to achieve a common task. Such is the nature of student teams, particular those studying in distance mode. Team members tend to have diverse skills with a limited history of working together, and little prospect of working together in other projects. Deadlines for task achievement are usually tight, and this restricts the normal socialising aspect of team introductions. Teams utilising the concept of swift trust tend to have high expectations of reliability and performance of team partners, and as such discuss team goals and required behaviour rules as their first activity.

In distance educational circles, the use of virtual teams and the Internet creates an online community. When a team is orientated around the achievement of an assessment task, the community depicts behaviour such as sharing information and resources, cooperation amongst members, and team identity. This sets the stage for collaborative-based learning. (Haythornthwaite, Kazmer, Robins & Shoemaker 2000).

Successful teams within the virtual academic environment highlighted team goals, swift trust, collaboration, reliability, timely task achievement, consideration of other viewpoints, and a regularity with electronic mail (email) communication [see Egea & Gregor, (2002), Van Ryssen & Godar (2000)]. The concept of trust underpins the achievement of team goals.

### 3 Methodology

The study presented here is the result of an action-learning project that has evolved over several teaching semesters. The case study examines the current implementation of team assessment activities. A brief history of the assignment design and implementation is presented in Section 5.2.

This paper presents the author's observations of the implementation of an assessment environment for virtual teamwork, supported by student and staff email and group forum discussion lists. The author is the course coordinator who worked closely with the

program design team to build and then add changes as the need was identified with the implementation.

Data was collected from electronic formats of electronic mail and discussion forum. There was a mail list for staff and two for students (international and regional division). Students also participated on discussion forums set up by class and campus.

Student and staff surveys on the teamwork assessment, were initiated in week 8 of the semester. To date (week 10), the student feedback is limited, less than 1% response, while the staff feedback was highly successful with 80% response rate. As a consequence, the perspective reflected in this discussion is limited to data collected from email interactions between the coordinator and student or staff member.

## 4 The setting for the case study

This section provides the background and context of the case study. It defines the student and tutor formation and the conceptual framework underpinning the course in question.

### 4.1 Students and tutors

Students from backgrounds of Information Technology, Information Systems and Multi-Media enter this course. With an initial student population of 450, course groupings are classified as regional (10%), external (10%) or international (80%). International campuses are placed in capital cities in Australia (4 campuses), or in overseas countries (2 campuses), with four regional campuses and one distance mode category under the direct management of the coordinator.

Student backgrounds at international campuses tend to be from Asian cultures. Tutors (staff) who teach at the international campuses are usually from similar backgrounds to the students (some are past students), while regional staff generally have Australian backgrounds.

### 4.2 Course focus

The course, Human Computer Interaction whilst integrating knowledge from a variety of disciplines, has a central focus on usability and its evaluation though iterative, and user-centred design. The social aspect of how people communicate and interact with each other (particular with online technology) is an area of study that has been neglected (Preece, Rogers, Sharp, Benyon, Holland & Carey, 1994). Potter and Balthazard (2002) indicate that interaction styles, in terms of task performance outcomes and process outcomes, are very similar between virtual teams and face-to-face teams. However, Aprin (1999) notes that socialising in education sectors is important in the development of common goals, commitment to team task, and group pride.

## 5 The Assessment Process

An assessment strategy evolved, over several semester of course development, to combine the principles of the course, (technology usage, communication and usability evaluation) with the generic skills of teamwork required by industry. This section describes the pedagogical aspects of the assessment design and the teamwork history in the course over three successive years.

### 5.1 Assessment design

Tasks were designed to develop team skills of goal setting, negotiation skills, research skills, presentational skills, and team cohesiveness. The assessment task involved team presentations of 'set' seminar topics, team reviews and team reflection. The topics are used to provide a currency to the weekly course material. Teams would be small in membership (no more than four students) and six teams would be clustered as one group. The web interface for each student would show their team and 5 other teams.

Detailed instructions were provided in the course profile, for the seminar presentation, and a template word file for the review was placed on the course website. Each week, each team was required to present a seminar or complete a review. Seminars would be downloaded by reviewing teams, the template completed and then uploaded back to the website by these teams. The presenting team would then collect the reviews, paraphrase them and document future presentational improvements. All tasks were to be submitted online at the course website.

### 5.2 Teamwork history in course

The style of this assignment using virtual teams, has developed over a number of years. The assignment grew from internal teams presenting team seminars, using videoconference links to regional campuses, into web-based virtual presentations. In all course offerings, a key feature was that teams has limited membership number.

In 2001, the teams were extended to include distance students. While internal teams continued to use live or videoed presentations, distance students were place in virtual teams. Team membership was based on locality where possible. The virtual environment made use of email lists. These were successful overall in achieving the assignment goals of team presentation and team review. All mail was electronically archived at the course website, so any missed email was easily found (see Egea & Gregor 2002 for detailed descriptions).

Problems that were identified included the arduous task of manually creating teams and subsequent mail lists, of incorrect electronic mail address, and poor linkage between email addresses and student. Initially students found it difficult to understand the actual assignment process of seminar and review. However once they did, there seemed to be minimal problems.

While the distance students were successful with their virtual team tasks, internal teams on the international

campuses had some problems. Inconsistencies in recording student marks and the return of reviews disadvantaged the teams and changed the assignment design for the section on 'paraphrase and reflection'.

The coordinator considered that total virtual management would support the team presentation, the team reviews and the markers results. By transferring the mail list management process to an online web system, it was felt that no team would be disadvantaged and all marks would be visible to the presentation team.

The next section describes the environment and design of the online assignment submission program for virtual teamwork satisfying the design criteria indicated earlier.

## 6 The Web-Based Program

The desired functionality of the in-house dynamic web administrative package was to manage the administration of the teams for all multi-campus, while at the same time provide an interactive interface for team seminars and reviews. The application would create virtual student teams, of varying size, based on tutorial class in any campus, or postcode group, would send electronic mail to marking staff and students, and would provide an interface for student and marking submissions.

In the final design, four views were developed and implemented: student, marker, campus administrator, and coordinator. The functionality of each view is present below.

### 6.1 Coordinator's view

- 1 Ability to upload current student data from university records
- 2 Ability create teams with size variation
- 3 Ability to view and update student data
- 4 Ability to email all students or individual students
- 5 Ability to view student forums
- 6 Ability to update campus administrators and campus markers
- 7 Ability to view individual students or markers interface (proxy entry)
- 8 Ability to download student teams as an excel form
- 9 Ability to compare and update student data with current enrolment

Some features were identified as required as the teams were implemented. These included the need to have a varying team size, a means to access all the teams and groups by student number, and a method to check enrolment currency as the semester progressed. Figure 1 (overleaf) presents this final interface.



Figure 1: Coordinator's view.

## 6.2 Campus administrator's view

Campus administrators were given subsets of the above tasks so that they could add students to the database, send emails, add markers, view forums and view student or local staff interface. Figure 2 demonstrates this interface.

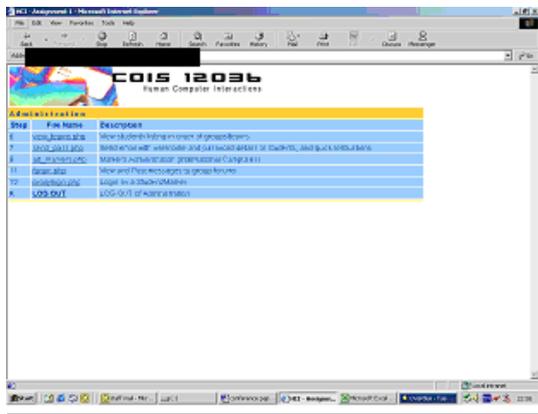


Figure 2: Campus administrators view.

Initially, the campus administrator could not enter as proxy student or staff member. This meant that their view was extremely limited.

## 6.3 Marker's view

Markers have the general function of group support, through the forum discussion list as well marking the team submission.

Figure 3 shows that the marker needs to enter their marking site (same as the students view) with their username, password, and campus of operation. In some cases, markers marked more than one group, so upon this entry, the marker would identify which campus was to be marked

## 6.4 Student's view

Students enter their Assignment 1 view of the web application with a specified username and password.

The functions of the student view are shown near the top of the screen: Edit my details, view group/team, view submissions, submit file, and group forum.

- 1 Edit my details: Update email details

- 2 View group/team: Name and email address for each group member is placed here
- 3 View submissions: The teams, dates and times of submissions are presented here
- 4 Submit file: Upload a submission to site (presentation or seminar for that team)
- 5 Group forum: Discussion list for this group.



Figure 3: Marker's entrance screen

Figure 4 present the student teams, with the details of each team and the assignment task. The highlighted section provides the student the details of their team.



Figure 4: View of one student in Team 2.

## 7 Course in Action: did the program work?

While the software package was based on previous models of the virtual teams with electronic mail groupings, it had not been trialled (nor was it able to be) before being used for live classes. As such, the program was updated with improved functionality as the coordinator required changes.

### 7.1 Coordinators additional tasks

The system was designed for a text-based file of student data to be uploaded and the system would divide the students into teams, based on their campus. Once teams were completed, emails would then be sent to each student to notify them of their teams, assignment details and entry details to the online assignment program.

However, it was clear very early in the semester that additional data was needed to allow the system to place the student in teams based on campus and tutorial class.

To form the groups and teams for each campus, the coordinator divided the course file into separate files by campus. The lead lecturers were asked to update the teams into the tutorial classes. As class sizes grew beyond expectations, and the lead lecturers were new to the course, the coordinator needed to manage this aspect of the team creation. It was necessary to locate the tutorial groups. Each campus did this differently. Only campus (Sydney) could linked the coordinator to their campus database. The other complex (Melbourne) depended on the campus administration to create lists for them.

In both cases, students placed in the tutorial classes were inconsistent with the university database. Students were continually entering the course, and were added to the local campus database but not the university one. As well, email addresses differed across the two databases. It was decided to wait until mid-end of week 2 to create the teams due to the inconsistencies occurring in the databases. However, this meant that the first teams had limited time to prepare for their presentation.

Once the numbers were regarded as being semi-permanent, the coordinator placed the additional campus details on the administrative program. The class sets then could be generated in teams of various sizes. In most cases, the team size was three. In all, there were 126 teams, over 21 groups across six campus groupings. The teams were all completed by the end of week 2.

Some groups were spread across campuses (Singapore and Gold Coast), while campuses with large student numbers, had up to nine groups (Sydney-170 students).

## 7.2 Issues for Campus Administrators

The database was designed for administrators to change or update the teams in a most simple manner. Simple one-page instructions were developed to cover each function of the interface for updating student information. Tasks included adding a new student, updating a student's electronic mail address, deleting a student, and sending a student electronic mail.

Figure 5 presents the interface for the task of updating or deleting student details.

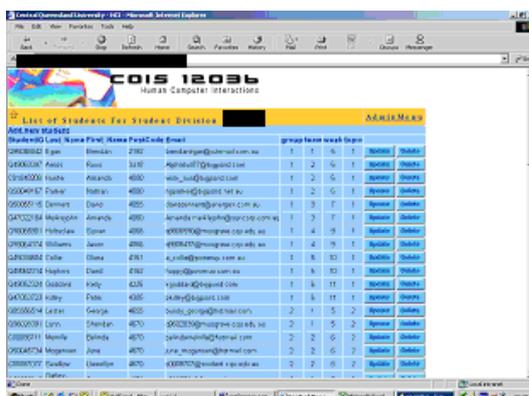


Figure 5: view teams

This interface shows, for each campus group, the students, by student number, name, tutorial group and email address and their assignment details; group, team, week of presentation and topic number.

For the teams to function correctly, the program depended on the correct information for the key variables of team number, week of presentation, and topic number for aligning to student submissions.

When the tutor selects 'update', a form similar to the interface in Figure 6 is presented. All cells in the form needed to be completed for a successful update to be made. If data was missing, the student would be placed in an auxiliary work space and extract from the group and team

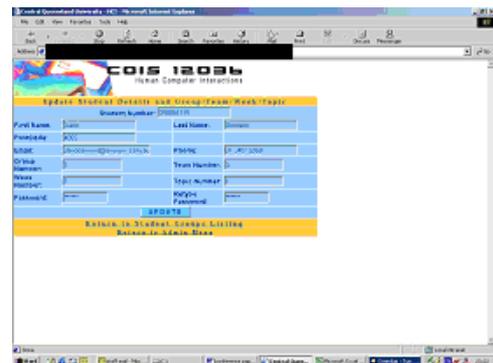


Figure 6: update screen for student data

Some tutors/campus administrators appeared confused with the order of the information for teams, week of presentation and topic number. This resulted in a variety of topics that did not exist in the student list of topics and weeks of presentation that were out of range for the course. Much dialog between the coordinator and the staff member was encountered for the campus administrators to reverse the changes. In one case, the team and group structures were completely redone manually by the coordinator.

Sometimes, when the campus administrator used the update option, they were unsuccessful in the process. If and when the problem was noted, the campus administrator wrote to the coordinator for a solution. Email was commonly used by most administrators, range from 17 email in week 1, to 57 emails in week 2, and weeks 3,4 and 5 each with 37 emails. In the case of one international campus, the administrator wrote up to 8 times in any one day. It was expected by the staff and the faculty, that 24 hour turn around time would occur. Normal, the coordinator would send a return email within the same day of the query.

Other queries included the concept of team and group, of team membership, of weekly topics, of username and password problems, and an inability to enter the website for the administrators. Each week, the coordinator would provide feedback to each or all of the staff (using the staff mail list). Most queries came from the international staff, across six campuses. In future, a frequently asked question site may be an option to reduce this work load, combined with a simulation to

answer questions on team structure, presentations and reviews.

### 7.3 Issues for Campus Markers

The most common query was entry into the marker's site. Since campus administrators were also markers, the use of the same password and username was not possible. As well, given the structure of tutorial classes and markers in some campuses, these markers would enter as two different usernames and password.

Once these issues were corrected, very few emails were sent on marking issues. It seems that the review sheets were easy to complete online. However one marker did ask to be guided as how to grade students with a sliding tick on the marks table.

### 7.4 Overall Feedback from campus staff

In week 8, an email survey was sent out by the coordinating requesting staff to reflect on usefulness of the assignment and the software package. Eight staff responded from a total of 10. The majority of these respondents were from the international campuses and hence their issues dominate the discussion. Since the responses were provided when the teamwork assessment was in its third week of student submissions, when many of the problems had been resolved, it is considered more desirable by the author, to blend in the comments from the email traffic between the coordinator and the staff that had occurred earlier in the semester. Common themes were identified and are detailed below:

1. Introduction to the team structure, and the assessment tasks was confusing, re
  - a. the design of the teams and groups
  - b. the meaning of 'topic'
  - c. weekly activities
  - d. dual activity of face to face presentation alongside virtual submission
2. Face-to-face training is needed to support the campus administrative tasks
  - a. Strong desire of staff to place students in teams of their own choice
  - b. Interface did not provide sufficient feedback when errors occurred
  - c. Constant contact with coordinator for support and guidance
3. Pedagogical gains
  - a. Overwhelming satisfaction with the outcomes of the assessment process
  - b. Identified process of collaboration
  - c. Real student learning
4. Interface easily supported marking and student interaction

5. Some markers preferred to mark the live seminar rather than the online presentations since student considered that live presentation was part of the grading.
6. Online connections were difficult for some campuses

Some examples of staff comments:

#### Pedagogy

##### Sydney tutor 1:

I just wanted to add one more point to your views. I also felt that the students are doing the presentation on the same topics that they were lectured that week, which would give them a wider understanding of the topics taught in the class.

##### Gold Coast tutor:

As I also said in my previous email, I think the rationale, concept, and structure of the assignment is good, and the students learn much from it.

##### Sydney tutor 2

These are changes I request:

..3)In local campuses its better if Assignment 1 is marked on their live delivery in the class..were the marker can make a genuine distinction between teams.

#### Mail on cultural clashes: (Fiji tutor)

I have found difficulties with the Chinese students communicating or imparting any information at times. They are OK when amongst themselves because they find it easier to communicate and to do projects. Last semester we had an Indian student with them and just because of communication problems.....failed the unit because the Chinese students made their own arrangements when organising project meetings.

Example of an electronic mail where staff present an anxiety about updating the student team:

#### Coordinator's brief message:

please make the updates of email addresses yourself..it is very easy to do, (see staff only page for assignment 1) also remember to send it to the students.,,(option 7 I think)

#### tutor's reply: (Fiji campus)

I'll try and I hope I don't find it confusing.

Staff were asked to respond to improvements required to make their work easier

#### Tutor in Sydney

These are changes I request:

..  
2)More training required for staff who use HCI link because in Sydney campus the groups are dynamic(Keep changing) until week 6-7.

#### Gold Coast campus tutor:

I found the introduction to the structure of asst 1 very difficult to follow, and was not at all surprised to see so much email

starting to come through asking for explanations.

Interestingly, this tutor did not comment during the early part of the semester to raise these issues. However, it is evident that some tutors were confused about what was required of them to operate effectively in this virtual administrative environment. Since their time was very limited, they preferred to ask the coordinator for support, rather than read about the tasks at the staff website.

One final example comes from Singapore. Here the tutor has taught the course previously where the teamwork involved only live seminars. This semester his class was joined with students from another smaller campus. From the interface interaction and the email comment below, it can be seen that the tutor had limited understanding of the virtual design. His summary explaining the teamwork and seminar process (below) indicates that he duplicated many of the facilities that were available online at the HCI site.

#### Response (Singapore tutor)

Organisation of the teams was easy, the process on the first lecture was:

- A 15 mins discussion of Assignment 1
- Flashing of a few samples of D and HD HCI assignments from past batches so that the students know what to expect
- Formation of team
- A form for each member student to fill in, introducing themselves as well as indicating (1) their group (2) their presentation topic

Further indication that the tutor was not aware of the team interface:

Immediately after the lecture

a. class list (with their email addresses) is created, and immediately sent to them.

b. The class list serves a few purpose: ---  
Allowing me to know who is in what group, so that I can update the website - Allowing me to ask individuals questions during the next session (on a round robin basis by group)

- Allow ALL the students to know the email addresses of their peers for immediate communication over the email - it's usually pretty exciting or chaotic during the first lecture, thus not all of the students would have exchange their particulars with the rest of the members of their group.

c. Allow me to reach out to group by group over the email instead of 'spamming' all of them, particular useful for group assignments.

This highlights several problems that the coordinator only became aware of in week 10.

### 7.5 Student approach to the teams

In the first week of semester, students were asked to inform their tutors of team partners. It was felt that while the teams in industry were generally without association, the teams in this course, would benefit when students could choose their teammates. Interestingly, only a few students indicated a team preference within the regional and external students. On the other hand, many of the international students chose their teams. Since cultural differences were prominent

in these campuses, the coordinator was pleased that such opinions were expressed.

For the primary users of the system, the system was apparently easy to use. Students quickly became aware of their team members, the assessment tasks and their submission dates, and in general performed as required. Figure 7, presents the view of one group in Melbourne. The underlined text displays the presentation and the reviews for each week. This is a highly successful group as all teams have presented as required (to date) and the other teams have submitted their review files.

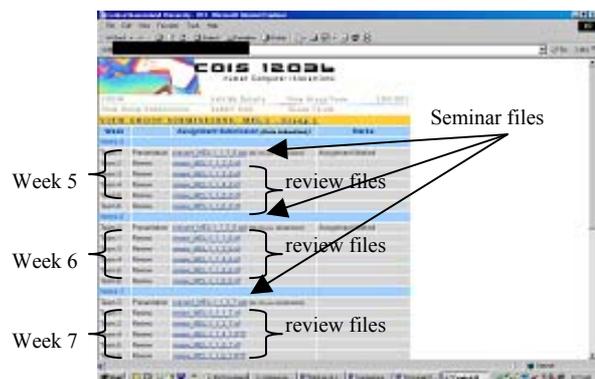


Figure 7: Student view of weekly submissions

Students generally had little trouble with submitting their files online.

The electronic mail lists for regional-external and international students were used to transfer information to students and to answer student or staff queries. The international list was more widely used, possibly indicating that these students need more reassurance than the regional domestic students. Many of the queries inquired about 'forgotten' username and password. As well, many of the international students used hotmail accounts, which quickly filled, causing numerous requests by the coordinator via the tutors to the students to be aware of the situation.

The interface for this group site presents the team members, their electronic mail addresses along side the weeks of presentation required for each team. When a team was not presenting, it was in review mode. Presentations and peer reviews can be uploaded at this site. Also, any member of the group can download these files. A forum facility was also provided, for group discussion.

The forum lists on some groups were quite active. However, this was not typical. The regional-external students were quite active and used the forum to ask questions of the other members, to provide feedback on their submissions, and in some case initiated some competition comparing their presentations with the other teams presentations, as seen in this dialogue:

I would like to see any other group top our effort..Carl.

Hi James

just reviewing your groups submission. Congratulations! I know its only another students personal opinion, but i think you have all done an excellent job on such short notice.  
therese

## 8 Significance of Study

The work presented in this case study, indicates that there are many factors that need to be considered when an online approach for teamwork is required of staff and students.

The initial aims of the coordinator's approach towards virtual teamwork, has been successful for the students from the three backgrounds: regional-internal, external, and international-internal. This was judged by their ability to achieve the weekly online task of team assignment (presentation or review) independent of the staff who taught them. Some individual team members formed a wider community by using the group forum, the focus of several teams. As well, the reviews required for team summary and reflection were available online. The students did not need to depend on their tutor returning paper reviews to the presenters (as was done in previous years with live seminars).

For the coordinator, the virtual environment provided an immediate snapshot of the teams and their achievements in the team activities. As well, the interface provides information on how each campus is progressing. This is highly desirable for managing a large multi-campus operation, with 450 students in the course and 10 staff.

However, for the teaching staff, there was less initial success. The staff were uncomfortable with the team structure, and the weekly assessment, particularly with the added online component. Once this was overcome, they were very positive with the assessment outcomes.

Three solutions have been identified to support the staff and to reduce the email burden of the coordinator: all campus staff will be markers, without campus administration tasks, a simulation of the weekly assessment with teams will be prepared, and the staff will have the proxy access to view the student interface

In summary, the use of the virtual environment to manage the managers for virtual online assessment tasks requiring student teams requires far more resources than face-to-face management. However, the perceived learning outcomes for the student within the virtual team environment appeared to be successful, independent of the staff anxieties.

## 9 References

Aspin, M. (1999). *Virtual Teams in Education: new management theories*. Online Conference Paper presented at NetWorking 1999 Conference, Melbourne, September 1-3. Available at <http://www.nw99.net.au/papers/aspin.html>. [2001,10th December].

Collings,P. and Pearce, J. (2002). Sharing Designer and user perspectives of web site evaluationL a cross-campus collaborative learning experience. *British Journal of Educational Technology*, 33 (3), 267-278.

Egea, K. and Gregor, S. (2002). Reflections on communication processes and virtual teams by lecturer and student cohort: a case study. Conference

Proceedings, Informing Science + IT Education Conference, Cork, Ireland, June 19-21, 2002, ISSN 1535-0703 .

Haythornthwaite, C.,Kazmer, M.M.,Robins, J.and Shoemaker, S. (2000). Community development among distance Learners: Temporal and technological Dimensions. *Journal of Computer-Mediated Communication*, 6(1). Available: <http://www.ascusc.org/jcmc/vol6/issue1/haythornthwaite.html> [2001,12thDecember].

Jennings, L. (1997).Virtual teams transcend time and space. *Futuristic* 31(5) 59.

Johnson, P., Heimann, V, and O'Neill, K. (2001). The "wonderland" of virtual teams. *Journal of Workplace Learning*. 13(1). 24-29.

Lawler, E, Mohrman, S. and Ledford, G. (1992). *Employee Involvement and Total Quality Manangement: Practices and Results in Fortune 1000 Companises*, Jossey-Bass, San Francisco.

Meyerson, D.,Weick, K.E. and Kramer, R.M. (1996). Swift trust and temporary groups. In R.M. Kramer and T.R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 166-195). Thousand Oaks, CA:Sage Publications.

Potter, R.E. and Bathazard, P.A. (2002). Understanding Human Interactions and Performance in the Virtual Team. *Journal of Information Technology Theory and Application (JITTA)*, 4(1),1-23.

Preece,J. Rogers,Y.,Sharp, H., Benyon, D., Holland, S. and Carey, T.(1994). *Human-Computer Interaction*. Essex, England: Addison-Wesley.

Roberts, T. *Academics in Academic: The Forgotten Resource in the Rush to New Technologies*. *Educational Technology and Society*, 5(2). Available at [http://ifets.ieee.org/periodical/vol\\_2\\_2002/roberts.html](http://ifets.ieee.org/periodical/vol_2_2002/roberts.html). [2002,4th December].

Snoke, R. and Underwood, A. (2001). Generic Attributes of IS Graduates - A Comparison of Australian Industry and Academic Views. *Journal of Global Information Management*, 9(2), 33-40.

Stough,S., Eom, S., and Buckenmyer,J.(2000).Virtual teaming: a strategy for moving your organization into the new millennium. *Industrial Management & Data Systems*, 1000 (8) 370-378.

Van Ryssen, S. and Godar, S. H. (2000). Going international without going international: multinational virtual teams. *Journal of International Management*. 6, 49-60.