

Collaboration on teamwork projects across borders

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1. RATIONALE AND BACKGROUND

TLQIS funding enabled us to investigate the effect upon our students of collaborating with students at another European institution to exchange expertise and evaluate their work. Salford's TLQIS scheme funded a pilot study to develop a framework for resources for collaboration, that will be expanded into a larger scale project for which we are applying for funding, e.g. from the Minerva programme.

Online learning is being used to enable wider participation in higher education. The module Developing Systems for Teaching and Learning (DSTL) enables students to experience some of the possible forms of CMC (computer-mediated communication) to facilitate online learning. As part of the module, they are expected to reflect upon their own and others' learning styles and preferences, so that they can appreciate situations in which the various tools might be appropriate (Cowan, 1998). Learning how to learn is an important general aim of higher education (Nightingale & O'Neil, 1997), that is specifically articulated in this module as the abilities to reflect on their own learning and that of others, by reflective evaluation of work produced by other students. It is collaboration by means of mutual evaluation that has been the subject of this project.

This project builds on the benefits achieved by a previous TLQIS project (Bell, Jones, & Procter, 1998) in two ways. First, this work is a further development of the DSTL module, adding value to the content and activities already developed. Secondly, by involving Frances Bell as the Evaluator, the previous work done on discussion and reflection can contribute to research and inform development.

The DSTL module mixes online presentation of material with face-to-face sessions and tutorials, so that students are in regular contact with each other and the tutor. However, as the students are campus based, they did not always use the CMC tools for evaluating each other's work, as was required for the assessment. Instead, not unreasonably, they discussed their projects face to face. DSTL students were required to engage in online evaluation for two reasons:

to gain a realistic experience of using the CMC tools that play an important role in Information and Communications Technology (ICT)-based systems for teaching and learning
to engage with students from other countries, and see what benefits this may bring.

Computer mediated communication (CMC) tools, such as conferencing, email, discussion forums support the communication needs for the task roles of group projects, examples include studies of co-operative learning in a virtual university (English & Yazdani, 1998) and groupwork in mathematics teaching, (Hendson, 1997). However, participation can be an issue for online students, (Hill & Raven, 2000). A previous TLQIS-funded project has investigated groupware for supporting students (Bell et al., 1998).

2. ACCOUNT OF COLLABORATION

The results of the first cycle were recorded in the Interim Report, so will not be repeated here.

The second cycle of the collaborative exercise took place in Semester 2, 2002. The arrangements for the second cycle were planned based on our guidelines for a collaborative exercise. The time schedule was planned to enable social interaction first, the learning outcomes for both sets of students were clearly defined, and assessment was built into the design of the exercise.

As in the first cycle, it was not possible to match all those Salford students who wished to experience the collaboration as planned. Again Salford students' opinions were gathered through a questionnaire, focus group and evaluation of their assessed work. Their discussions using the conferencing tool were saved so that they can be analysed to give some quantitative measure of the ways in which the tool was used. The Dutch and German

students' opinions were gathered using the same questionnaire (appropriately worded). Also the opinions of the tutors involved were sought.

Initial analysis indicates that students value such an exercise, so we intend to proceed to a third cycle of the collaborative exercise. We are currently examining any student dissatisfaction, refining the draft guidelines, and we shall report the results in a journal publication during the next few months.

3. MEETING THE PROJECT OBJECTIVES

As researchers working in a project based on a module taught by one of us, the Action Research (AR) approach offered us support for achieving problem-solving for the project, and for testing and generating theory, (Baskerville, 1999; Mumford, 2001). In AR, the researcher is simultaneously participating in a collaborative venture to create organisational change, and studying the process of that change, (Avison, Baskerville, & Myers, 2001). AR was first used in the 1950s, by socio-technical researchers from the Tavistock Institute, to research into and change industrial practice for the benefit of people working in those industries, (Mumford, 2001). AR was adopted by researchers in order to increase the relevance of the research, but AR studies have been subject to criticism because of perceived lack of validity, (McKay & Marshall, 2001). AR is essentially cyclical in nature, e.g. Checkland's Framework for AR, (Checkland & Holwell, 1998), and Susman and Evered's 5 stage AR Process, (Susman & Evered, 1978). In order to clarify validity claims, twin cycles of problem-solving and research have been identified, (McKay & Marshall, 2001).

Our data sources were as follows:

Content of discussions (relating to evaluation of the collaborative activity) on the on-line resource

Student reflection on the contribution the e-exchanges have made to their learning experience, incorporated into one of the group components of the module assessment.

Content of student logs / reports, incorporated into the individual component of the module assessment

Focus group discussion

Statistics for use of the virtual seminar by both sets of students

We present the outcomes and findings of our work relating to problem-solving, in terms of the development of this activity within the DSTL module, and research which is of more general interest.

3.1. Discussion of Outcomes

We identified four anticipated practical outcomes from the project.

Outcome 1: Both sets of students should gain a deeper understanding of the pedagogical issues involved in developing multimedia systems

DSTL students had this opportunity since they were able to reflect on other users' use of their prototypes. The students from the other institutions were not necessarily studying similar or related modules, so pedagogical issues were not necessarily the only evaluation criteria discussed by the students. Interaction and web design issues were also discussed giving richer benefit for the students.

Outcome 2: They will have the opportunity to gain an insight into each other's cultures, different knowledge and experience.

In neither of the two cycles did the collaboration run long enough for the students to socialise prior to discussing work issues, despite planning this into the exercise in the second year. As a result students gained limited insight into the others' culture, knowledge or experience.

Outcome 3: The guidance notes would be of benefit to institutions planning to use networking across borders.

After the first cycle of the exercise a draft set of guidance notes was drawn up and used to plan the second cycle. Our experiences during the second cycle raised issues that informed revised guidance notes that have since been published for wider dissemination and feedback.

Outcome 4: Discussion of our experiences with other networking applications at conferences will give a valuable insight into cultural and learning style differences between countries, which need to be considered when implementing such an exercise.

Dissemination of the results after the first cycle, at the Networked Learning event at Manchester University and at the EUNIS conference, provided us with some interesting suggestions regarding differences in cultures and learning styles.

Guidelines

The guidelines we devised for organising a collaborative exercise are:

- The activity should benefit both sets of students in order to promote collaboration
- Learning outcomes need to be clearly defined for each student group
- Plan the activity to include social interaction as early as possible
- Assessment of the outcomes of the collaboration increases motivation
- Students like the added dimension of a different language/culture

Research Outcomes

We can discuss the preliminary research outcomes of the project by considering each of the project aims.

Evaluating the effectiveness of networked collaboration across borders, where students bring their different group expertise to bear on a discussion of prototypes of proposed systems.

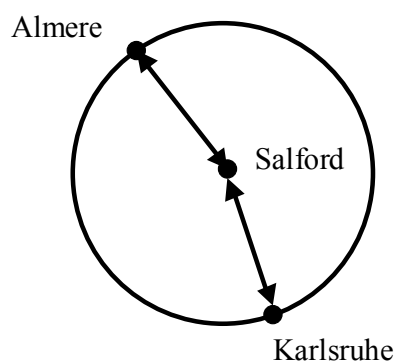
In measuring the effectiveness of the networked collaboration, we needed to balance gains in terms of learning outcomes against the resources devoted by all parties to the development and conduct of the learning activities.

This was done in three ways:

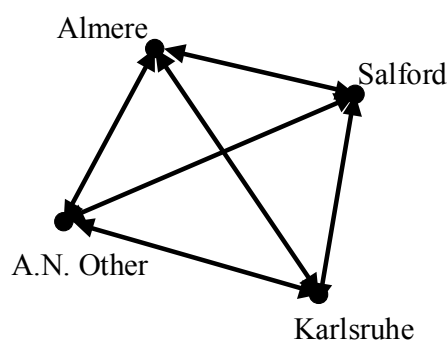
- Reflection on teaching and learning activities
- Comparison of time spent by staff and students with a traditional face to face approach
- Comparison of the achievement of the learning outcomes specified above by students using this approach with the approach adopted last year

One of the criteria for measuring success is whether students are able to make effective use of the feedback in producing the follow-up assignment. Comparison with previous years' assignments shows a marked improvement in critical reflection of their learning system, but it is difficult to ascertain the extent to which this is due to the collaborative exercise.

An interesting finding from our data was that each group of students, whilst recognising the



Hub and spoke collaboration



Network collaboration

benefits of the activity, saw the other group as deriving the greater benefit. In an age of increasing student-staff ratios, staff time is a scarce resource to be used carefully. In each of the two AR cycles, the Salford tutor has been the active partner in arranging collaborations.

Figure 1 Types of Collaboration

We have characterised this as hub and spoke collaboration that has benefits in terms of promoting collaborative activities but significant administrative overheads for the organiser at the hub. We are currently considering a true network collaboration, and ways in which the collaboration can become more student-managed to reduce the management overheads for the tutor.

Evaluating and refining a pedagogical model for internet-enabled student collaboration, discussion and shared reflection.

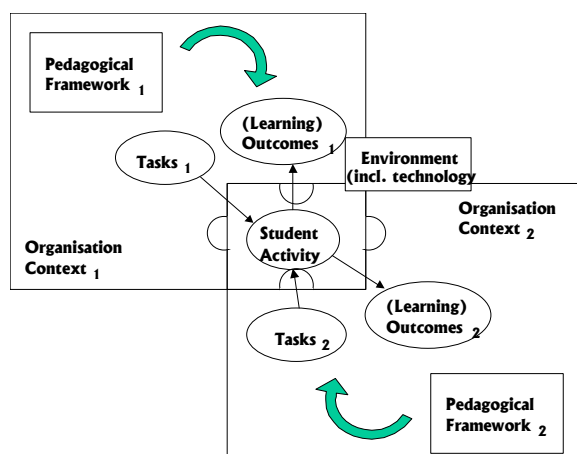


Figure 1 Pedagogical Model for Cross-institutional Collaboration

We adapted Goodyear et al's pedagogical model for networked learning to cover collaborative activities between groups of students with different learning activities, see Figure 1 Pedagogical Model for Cross-institutional Collaboration. This model accommodates collaborative learning activities where the collaborators can have different tasks, learning outcomes and institutional contexts, and has informed our evaluation of the asymmetric nature of the student experiences. For a fuller account, please see (Whatley & Bell, 2002).

Our initial areas of interest included: tools provided for collaboration, service aspects, the quality of the activity itself, and personal issues e.g. learning styles, language, etc.

Here follows a brief discussion on these aspects. A variety of tools are available for this type of exercise. The chosen discussion tool was successful, but had certain limitations and some students chose to communicate using email. The exercise was set up in an accessible manner, and the platform proved reliable, though the file server failed on a couple of occasions when it caused difficulties for students.

The quality of the activity was not as good in the second cycle as the first, but we have identified key reasons, some of which were outside of our control. We have gathered a considerable amount of material to examine some of the personal issues involved, and will select the promising issues for further analysis and publication.

Over two cycles of the exercise, we have found that networked collaboration can be effective, and the students involved enjoyed the experience. We have also found that the pedagogical model developed from Goodyear et al's model was useful to the academic planning the collaboration, (Goodyear, 2001). We are currently investigating its usefulness for the collaborating institutions, for the next cycle.

DISSEMINATION AND FUTURE WORK

The first cycle culminated in a set of draft guidelines for future collaborative exercises. These have been disseminated at the following events:

A presentation at the ALT Conference, September 2001, (Whatley, Bell, & Thissen, 2001);

An EDU Workshop at Salford, November 2001;

A presentation at the Networked Learning event at Manchester University, February 2002;
Published paper and presentation at the EUNIS conference, June 2002, (Whatley et al., 2001)

A bid is in preparation to the European Minerva fund, to pursue this exercise on a more formal footing, with clear outcomes and progression planned. The number of European partners is to be increased, and networks of partners developed, rather than us at Salford being at the centre of the organizational activities.

CONCLUSIONS

Reflecting on this project as a whole, we have fulfilled both of our original aims. We have evaluated the effectiveness of networked collaboration between "different" groups of students, and used our evaluation to inform guidelines for such collaborations. We have developed and refined a pedagogical model for internet-enabled student collaboration, discussion and shared reflection, specifically between groups of students with different learning outcomes. We also realised, in various ways, the anticipated practical outcomes of the collaboration.

As a result of the second cycle we need to refine our guidance notes, in particular considering the part the activity plays in the overall module design and the module assessment. It appears that reciprocal activities do not need to be similar, but the activity must be an integral part of the module content. In this way the social interaction can be planned into the programme earlier.

Findings from our two action research cycles have been disseminated within Salford and elsewhere, and we are actively seeking funding for a project that builds on this one. In short, this project has played a part in improving teaching and learning quality in Salford and the wider educational community.

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