

Teaching CSCW in developing countries through collaboration

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Teaching technical subjects in developing countries has proven to be a challenge. This is due to deficiencies in technology and knowledge resources, such as a lack of expertise in a field and a lack of up to date literature. These deficiencies have a major impact on the teaching of subjects such as HCI and CSCW, and have caused universities in developing countries to expand the scope of their teaching resources to form collaborations with other universities through distance learning technology. This report will focus on experiences of a collaborative project between the University of the Witwatersrand (Wits) in South Africa and Staffordshire University (Staffs) in the UK. The aim of the project was to provide experiential knowledge of CSCW issues through establishing communication channels between the UK and South Africa.

Background & Context

The main HCI component at Staffs is taught in the School of Computing. At Wits, in the Psychology Department, it is taught as a portion of one undergraduate module and two postgraduate modules. South Africa's recent apartheid history has left Wits with a wide discrepancy in the technological preparedness of black and white students. White students have been exposed earlier and more widely to information technology than their black counterparts. Exacerbating this discrepancy is the lack of access to computer facilities experienced by black students prior to attending Wits. Approximately 34% of students registered for the undergraduate module come from disadvantaged backgrounds both in their home and their school environment. The historically black schools in South Africa had in their agenda the perpetuation of deskilling the black population.

As such the provision of information technology to these schools was considered counter to government aims. Even with the change to a democratically elected government, these schools still find themselves comparatively under-resourced. The South African school system is in a crisis, and given that these schools are major feeders to Wits, this crisis continues into the tertiary education system. The majority of black households in South Africa do not have the disposable income to purchase basic textbooks. Computers are therefore a very low priority. In addition there are still many places in the country without access to electricity, making computer ownership redundant. Often this is in contrast to white households where computers are considered as essential and are used for work and educational purposes. It is quite evident that the computer experiences of students coming to Wits are extremely diverse.

While every student at Wits has some access to a computer on campus, this access is limited with regards to time and software applications. Within the Psychology Department there are fifteen computers for over 1000 students. Therefore these computers are restricted for postgraduate student use only. Undergraduate students have access to a communal computer facility with approximately fifty computers that service more than 4000 students. Computers are generally only used for email and word processing. With South Africa's re-emergence into the global community, collaboration with international universities has been greatly encouraged. However, given the large discrepancy in resources between these universities, collaboration presents many difficulties.

The collaboration between Staffs and Wits has been going on for two years, beginning with a project to examine the possibilities and difficulties of distance learning between the two universities (Thatcher et al, 1997). Since this initial project, a TeamWave groupware environment has been set up allowing international communication between lecturers and researchers. Recently this has been expanded to allow Industrial Psychology Masters students at Wits to experience the issues involved in CSCW. The collaboration also provided a basis for other research including human error in CSCW (Trepess & Stockman, 1999) and conflict resolution in computer mediated communication (Katz et al., 1999). This report will focus on the experiences of those involved in the collaboration, focussing on facilitators and inhibitors of the process.

Objectives

The objectives of this collaboration were the following:

- Provide an international communication channel for CSCW research projects;
- Provide a tool for teaching CSCW by experience;
- Examine issues for cross-cultural distance learning;
- Examine issues for cross-cultural CSCW use.

While these objectives are obviously paramount to the collaborative project in that they inform the ways in which the project develops, they will not be the specific focus of this paper. Instead the process underlying the development of the project, within the context of a developing country, will be discussed.

Collaborative environment

The software that was chosen to provide the communication channel between the two countries was TeamWave Workspace. This software provides a shared whiteboard and a number of shared tools such as diaries, voting mechanisms, databases and a textual communication channel [see <http://www.teamwave.com> for more information on this software]. Video and audio conferencing are available through NetMeeting. The video and audio conferencing capabilities were not utilised due to slow network speed, and limited hardware resources. We hope to provide video and audio conferencing in the future. TeamWave runs on most platforms; Windows NT and 95 workstations were used together with an NT server.

Student profiles

The students involved in the collaboration were Industrial Psychology Masters (by coursework) students at Wits. While there are twelve students in this class, a lack of resources meant that only eight students could be accommodated, and as such volunteers were called for. The resulting collaborative student group consisted of two male students and six female students. There were two black students, five white students and an asian student. These students use a

computer approximately 12 hours per week, for a broad range of purposes (including email, web browsing, word processing, and statistical analysis).

Inhibitors

There were a number of inhibitors that emerged in both developing and sustaining the project.

Resource Issues

Aside from resource issues already mentioned, at Wits it was found that access to computers linked to an external network initially provided numerous problems. The 11 general access computers for postgraduate use in the Psychology Department were not externally linked, and the computers in the undergraduate resource pool, while connected to the internet, did not have hard drives on which to download the collaborative software. It was also not possible to have the collaborative software resident on the general access server as the server was unix-based and the windows machines in the resource pool did not have facilities to run the client software. The research team eventually resorted to using individual staff members' office computers for the synchronous collaborative work. More recently, a postgraduate computer facility with internet access has been opened and access is currently being negotiated for this project. The students will still have to share this facility with nearly 200 other postgraduate students.

Skills

For all the Wits students, this was the first time that they had encountered any form of collaborative software (other than basic email). Many of these students complained of poor keyboard skills which inhibited their expression of concepts and ideas. While three of the Wits students had internet access from home, the remaining five students only had access to the internet (and the collaborative software) from the university, and hence were unable to practice or engage in asynchronous collaboration. In addition to this, the staff in the psychology department lacked technical skills with regards to networks and computers, and as such were unable to trouble shoot when necessary.

Departmental Culture

Against the background of a violent history, the Psychology Department at Wits does not see as its priority the support of an international collaboration project on HCI. Psychology that addresses the more immediate needs of the previously disadvantaged, such as community psychological counselling and post-traumatic stress counselling, are seen as more essential areas for practice and research than the socio-technical issues associated with cross-cultural CSCW use. This intolerance for computer-related studies is exacerbated by the staff's lack of exposure to information technology in their own personal and working lives. It is not the norm in the Psychology Department to use technology to communi-

cate, and some members of staff cannot even complete basic word processing tasks. The Psychology Department culture is one where research into the impact of technology is seen as a luxury, not an essential research and teaching practice.

Semester & Time differences

The semester structures of the two universities did not run synchronously, resulting in one group being on vacation while the other was well into the academic year and vice versa. In addition to teaching term clashes, minor difficulties were also encountered in organising synchronous sessions due to differences in public (bank) holidays and small fluctuations in time differences. These time differences result not only from the variations in time zones, but also from daylight saving changes, which South Africa does not have. While these time differences caused a great deal of frustration and confusion, only once did they prove detrimental to the establishment of a synchronous session. At worst they reduced the number of participants at a single time. The written communication was adapted to become more explicit regarding which country's time zone was being referred to when establishing session times.

Facilitators

The difficulties of setting up and sustaining the collaborative teaching project were only part of the experience of those involved. Other aspects facilitated the process.

Student Enthusiasm

The Wits students' enthusiasm with regards to the project was demonstrated both in their eagerness to volunteer for the assignment and their flexibility in relation to time and location. They willingly attended sessions that were held at inconvenient times (after normal teaching hours) and inconvenient locations (teaching staff offices). Students were also open to sharing their skills and knowledge within the group, providing their own support network.

Staff Enthusiasm

While the rest of the staff in the Psychology Department were not always supportive of the project, the project research staff were very enthusiastic about this new approach to sharing ideas and teaching skills. The CSCW environment provides the opportunity to gain valuable CSCW skills and an understanding of the cultural influences of people from different countries.

University Strategic Goals

Since the initiation of this project the Wits administration, in its new strategic planning document, makes several references to the importance of IT in the teaching and learning experience. There is now a written commitment to establishing "smart" classrooms and fostering international collaboration. In addition, the project team has been asked to provide input into how these goals should be enacted at Wits.

Conclusions & Future Directions

These experiences have proved invaluable in setting a direction for this CSCW teaching and learning project. Although initiating this collaboration proved problematic and frustrating, it is encouraging that the Wits administration now has this form of initiative as a primary strategic goal. Depending on further funding, the future of this project, and other projects like this, looks bright. Many of the inhibiting factors experienced can be resolved. Evidence seen by the facilitators of the process shows that such collaborations hold many possibilities.

The ideological outcomes of this initiative are also worth mentioning. Within developing countries it is too easy to disregard information technology and the role it plays in associated fields as being nonessential. Many emotive points can be raised with regards to using scarce resources for social upliftment projects. Basic needs have to be met before higher order concerns can be addressed. However, sole concentration on basic needs will only serve to perpetuate a cycle of deprivation in developing nations, as we fail to equip people with skills that are now essential for participation in the global community. Projects such as this are an effective way of demonstrating the value of CSCW as a powerful teaching tool, empowering students to meet future needs.

Future directions for this project include utilising and expanding the postgraduate computer facilities at Wits. It is hoped by the research team that other universities, industries, and research councils will become involved. This will allow us to assist developing countries in providing their students with relevant education. Another future aim for the project involves recruiting universities from a broader range of countries. This will enable the research team to focus more directly on cross-cultural influences, as well as enhance the benefits for developed and developing nations alike.

The benefits of and future directions for this collaborative project are twofold. CSCW as a teaching tool will remain a central focus, but will be expanded to explore a myriad of alternative teaching approaches. The project will also create an exciting forum for researching broader HCI issues.

References

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