

City-to-Surf - A peer-to-peer model of on-line professional development:

A collaborative mentoring model

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Abstract: This project explores the potential of electronic communications to support peer-to-peer interaction between separate whole-school communities as a means of providing both authentic, situated, professional development for teachers, concurrent with the development of enhanced student learning outcomes, and the intentional sharing of school 'culture'. The intense use of telecommunications by both teacher and students in a 'many-to-many' manner provides rich opportunities for teachers to rethink their pedagogy, reconceptualise their classroom culture, and for students to see teachers as learners 'in situ'. An extensive trial between two schools some 120km apart has demonstrated the basic functionality of the model. This paper discusses the origins of the project, findings from the trial, and the nature of the changes to be made to the model to enhance its effects.

Key words: mentoring, professional development, telecommunications

1. THE NEED FOR NEW MODELS OF PROFESSIONAL DEVELOPMENT IN ICT

Globally, there is increasing awareness of the need for teacher education providers to update their beliefs, practices, and programmes about the use of ICT in education, in both their pre-service and in-service offerings, in order to accommodate new technological and societal demands (for example, Davis, 2000; Cornu, 2001; Desforges, 2001). Davis (2000) notes that '... the whole field of teacher education, both the practice and the scholarship, now recognizes that technology has a place, and that new technology will influence education and teacher education worldwide'. However, while

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teacher education institutions have historically been reluctant adopters of ICT, with little real integration into their courses and professional development programmes (Nicholson and Zorn, 1995; Davis, 1996; Nicholson and Underwood, 1996; Nicholson, Selinger, Robinson and Cox, 1997), schools have been quick to rise to the challenge of developing effective models of professional development in ICT (for example, DEETV, 1998a; DEETV, 1998b). The school-developed model of on-line collaborative mentoring described in this paper was developed at Bayswater Primary School (one of Victoria's ICT Navigator schools) in order to meet the perceived needs of teachers and schools. The City-to-Surf project was a pilot of the Bayswater professional development model that was conducted between a suburban and a coastal school some 120 kilometres apart.

1.1 The problem with existing models

The City-to-Surf (C2S) model is based on many years of experience in providing exemplary professional development to schools and individual teachers. It seeks to both provide teachers with essential understandings about the use of ICT in education, and to change the culture of the participants' classrooms — to achieve a transfer of Bayswater's 'classroom culture' into other schools. This is an ambitious and important element of the model, resonating strongly with Desforges' findings (2001) about the desired professional development needs of UK teachers. In particular it addresses Desforges' criteria of providing:

- a standard and stable model of learning,
- coherent, organised, well-established findings,
- vibrant working examples of success.

The model stands in stark contrast to many professional development programmes that do not appear to have such a clearly articulated basis (see for example, Watson, 1998; Watson, 2001). Similarly, Gudmundsdottir's (1995) views on the cultural transmission of teachers' 'texts', and Putnam and Borkos' (2000) work on teacher thinking, both strongly support such a situated, contextualised, and peer-driven approach to professional development. Arguably, it is the absence of these elements from many current professional development programmes and pre-service courses that has led to the current realisation of the need for '...a new kind of training' (Cornu, 2001). A further differentiation from the majority of professional development programmes comes from its focus on achieving mutually reciprocal change between the participants, and its fundamental reliance on an on-line many-to-many interaction model.

2. THE CITY-TO-SURF MODEL

The C2S model is built around whole-classroom interactions (Figure 1) in which (at least) two classrooms synchronise their timetables and curricula for a defined period to allow them to work collaboratively on a particular topic or theme, and to simultaneously give, or receive, tutorial assistance and mentoring support from the other school. This is a complex management task. What makes it worthwhile to the school providing the programme is that its staff and students can also benefit from the knowledge, skills, and experience of the staff and students of the recipient school, as well as gaining further expertise in tutoring and mentoring.

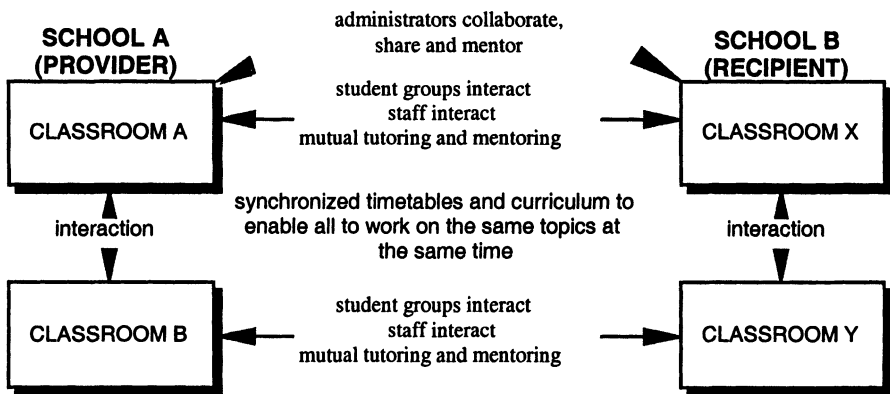


Figure 1. Core structure of the City-to-Surf model

The model used in the C2S pilot is designed to ensure that all levels of both participating school communities are involved in the project — teachers, students, and administrators — in an attempt to maximise engagement and active participation. Figure 2 attempts to depict both the structured and informal interactions that occur in this model. Both horizontal (teacher-teacher, etc.) and vertical (student-administrator, etc.) interactions are designed to ensure that issues relevant to all members of the school community are openly shared and discussed. For example, students have complained to administrators about the particular technology in use at their school, and the need to update it so that they can do their work more easily. Students in each school work in groups using MS NetMeeting to provide text messaging, whiteboards for sharing ideas, and web-based video to enable them to see their partners in the other school. This creates significant logistical and infrastructure challenges when there are some 60 students on-line, all working interactively with MS NetMeeting, using its ‘Share’ and

'Collaborate' functions so as to manipulate the remote computer, or to demonstrate particular aspects of the work.

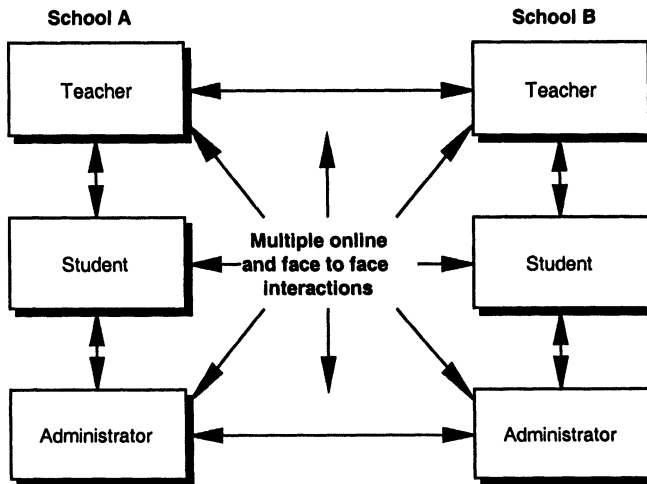


Figure 2. Conceptual structure of the interactions in the C2S model

This rich communication network provides mentoring and tutoring opportunities that transcend those normally found in carefully structured or scaffolded environments (see, for example, Wu, Farrell and Singley, 2002). In this model, the common purpose in which the participants are jointly engaged allows pre-designed structures to be overtaken by those driven by learning needs — Tatar's (2002) 'open, engaging, and partially self-organizing real-time on-line community' in which students collaborate to learn, and learn to collaborate (Lally and De Latt, 2002).

3. THE PILOT STUDY

The pilot study with Ocean Grove Primary School was conducted in the first half of 2001. Extensive negotiations, both academic and administrative, were conducted prior to the commencement of the trial. This phase consisted of face-to-face meetings (something that needs to be addressed for the future) in which administration, curriculum, and logistics were discussed and a plan of action developed. For the purposes of the trial, it was decided to use MicroWorlds software (Silvermann, 1997) because this both supported a collaborative constructivist approach to creating software (see, for example, Dillenbourg, 1999), and was in use at both schools. It was also one of the software packages that Ocean Grove staff wanted to explore further for its

potential use across the curriculum, and which supported multimedia features. It was decided to develop a curriculum focus around the theme of the formation of the Australian Federal Government, as 2001 was the centenary of the federation of the Australian states. The students were to work in groups to develop a programmed multimedia presentation about some aspect of federation — a task drawn from the studies of society and environment (SOSE) state curriculum.

Students at Bayswater, the perceived experts in MicroWorlds, were assigned to particular groups at Ocean Grove, and taught how to use MS NetMeeting's features, particularly the collaborate and share functions, and web-cameras (for simultaneous on-line video of their remote group). In on-line sessions, however, there was frequent changing of role as some students, in either school, became the expert for a period, to be supplanted by others over time and context – a significant change in the division of labour between and within the groups. Likewise, teachers supported each other on-line, sharing advice, ideas, and resources as well as providing encouragement for the project. As mentioned previously, this was not simply a peer-peer interaction, but both students and staff also engaged in vertical interactions (Figure 2).

For students, the pilot concluded with all of the participating students (and staff) meeting at Ocean Grove for a joint presentation of their projects, and a sharing of their responses to the project. This is not something that could be assumed to be viable in the future when participating schools could be either interstate, or overseas. Staff reactions to the project were positive, and have led to a desire for Ocean Grove to replicate the model for use with local schools. Prima facie this represents some transfer of the Bayswater culture and philosophy to the school, but longitudinal data is needed to determine the long term impact of the project.

3.1 Findings from the pilot study

Some of the important findings from the pilot are quite obvious (in retrospect) yet most significant in facilitating its effects. Some of the issues identified by de Wacht are:

- The teachers' 'learning curves' increase significantly for both the mentor and mentee as both cognitive demands and social learning models impact on time, demand new skills, and require new interaction models;
- Having on-line support at all times means pressing questions can be answered on the spot, providing a form of just-in-time professional development that can address some of the issues in the previous point;
- Student engagement has increased for most students;

- On-line communication techniques and practices are being developed at both schools;
- Student use of a range of technology has improved markedly due to the real-life nature of the project;
- Problem-solving techniques to deal with technical/group frustrations are being documented in student and teacher learning journals;
- Close association is being developed between the educators at the two schools.

4. FUTURE DIRECTIONS

The proof of concept trial with Ocean Grove demonstrated that the required functionality could be achieved with current technologies, but that greater bandwidth would have supported greatly increased levels of on-line co-operation and collaboration.

The trial, while successful, led to the realisation that the implementation of the model required levels of negotiation and interaction that could not be sustained beyond the trial phase. Discussions with Bayswater Primary School led to the proposal to commodify the model once it was refined — to create a user manual, planning materials, videos and other materials (to be defined) that would provide future participants with essential information about the project and its implementation in their school. It would also be a potentially marketable product (such as, for example, ISTE's Project *www.Y*). A project kit is seen to be essential in supporting this process beyond the initial trial.

A functional decomposition of the model was commenced in term 4 (2001) to clarify goals, processes, stages, etc. Subsequently, and in collaboration with Ocean Grove staff, the model has been reorganised and refined, resulting in a five-stage model to be tested in 2002 (Table 1).

Term 1 — Stage 1	Negotiation – to plan for the project's implementation, and to 'solve' administrative issues for the year.
Term 2 — Stage 2	Information, staff orientation, curriculum planning.
Term 2 — Stage 3	Addressing human factors, technical, and logistical problems.
Term 3 — Stage 4	Implementation.
Term 4 — Stage 5	Evaluation phase (with a follow up in 6 months time).

Table 1. The refined five-stages of the collaborative mentoring model

Beyond the development of the on-line collaborative mentoring model, and better articulating its conceptual basis, there is a clear need for better tools to capture both the complex interactions and changes in learning that appear to be occurring as a result of the use of this model. In particular, it

seems to be essential to be able to capture some valid measurement of changes in: (a) both staff and student levels of co-operation, collaboration and co-construction of knowledge; (b) the division of labour in the classroom; and (c) the wider impact on the 'rules' and 'community' involved. Currently there are few tools available that can capture these in ways that are useful, at least in the short term, to schools and for diagnostic use.

Preliminary research into the use of structured modelling language for modelling interactions in problem-based learning contexts suggest that it might provide insights into ways in which such modelling can be related to more formal descriptions of processes — which may have some potential for developing observational instruments for classroom use. If this is so, then there is some likelihood of developing a structured instrument like Fullan and Halls' CBAM instruments (but for observation, perhaps) for use in mapping classroom processes. If this were to eventuate, then it might provide the means to validate claims about the impact of ICT on learning, and in terms of this project, to provide quantitative data in support of some aspects of its claims to change classroom culture — something that is actively needed in the field of ICT in education.

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BIOGRAPHIES

Paul Nicholson has research interests in the design and use of on-line environments for developing higher-order thinking and the development of ICT-based tools to support effective on-line teaching. **Peter de Wacht** is an experienced ICT educator who developed the visionary collaborative on-line mentoring model described in this paper as a way of broadening and extending his students' learning opportunities and roles.