Using ICT to increase professional connectedness for teachers in remote Australia

ABSTRACT
Connecting with other education professionals is important in supporting teacher learning. Teachers in remote locations in Australia experience a professional isolation due to geographic isolation that makes it difficult to engage in sustained collaborations with other teachers. In a national project ICT was used to assist these teachers by connecting them for the purposes of having reciprocal interactions and developing a sense of community, both of which facilitate professional connectedness. A five-phase Transformative Professional Learning Model supported by the use of ICT, in particular videoconferencing, was implemented for teachers in remote locations across five different states of Australian. These teachers reported a sense of an expanded professional connection despite technical issues during the videoconferencing sessions used to support some phases of the model. To improve the sustainability of the connection of remotely-located teachers in the future it is recommended that the model be modified to include videoconference-based connection in each phase rather than just focusing on synchronous inter-teacher communication at the introductory and concluding phases of the professional learning.

INTRODUCTION
Information and Communication Technology (ICT) has the potential to enhance the delivery of professional learning to teachers in geographically remote locations who are unable to readily access face-to-face professional learning opportunities. When investigating professional connectedness and isolation, the SiMERR National Survey (Lyons, Cooksey, Panizzon, Parnell, & Pegg, 2006) found that in Australia the teachers in remote locations have greater professional learning needs than their counterparts in metropolitan or regional areas. A model of professional learning is needed to help overcome the issues that arise when remote teachers are unable to travel the long distances needed to join with other professionals to develop a sense of professional connectedness.

This paper explores the requirements of teachers in remote locations in Australia when accessing professional learning and proposes a model, facilitated by the use of ICT that is designed to deliver collegial learning opportunities for these teachers. The five-phase transformative model, developed and trialled in a national project, has a strong focus on the use of videoconferencing to connect remote teachers with colleagues for professional conversations.

Professional connectedness
The professional learning needs for teachers in remote locations identified in the SiMERR National Survey (Lyons et al., 2006) included the need for more formal professional development delivery as in-service and the need for more opportunities to form professional relationships. To best meet these needs a stronger professional connectedness needed to be facilitated. There are practical reasons why standard professional development models involving face-to-face activities are less than optimal in remote locations. Most obviously, the cost in time and dollars due to the distances that must be travelled by the presenters and/or the attendees, and the lack of replacements for teacher-release spark the need to consider alternatives. So what can be offered to teachers in remote locations to better “connect” them for the purposes of professional learning and reduce the problem of professional isolation?

Before resolving this issue, it should be noted that Australia is not the only country struggling with the challenge of delivering effective professional learning to geographically isolated teachers. A series of Teacher Learning Resource Centres has been developed in technology-poor China to improve the professional connection of teachers (Robinson, 2008). Although the project began with low bandwidth the technical connectivity has improved and teachers have been able to join discussion groups, with one teacher reporting the sense of now having “windows on the world” (Robinson, 2008, p. 10). The ICT-supported school-based approach taken in this project was designed to address teachers’ rights to professional learning irrespective of geographic location and demonstrates how ICT has allowed opportunities for professional learning in China to be more equitably available across the country.

Thus, two important considerations for addressing the professional learning needs of teachers in remote locations are the provision of opportunities to develop professional connectedness and how ICT can be used to make these more equitably available. To explore this further a professional learning model was sought that was suitable for geographically isolated teachers.

Professional learning models that promote connectedness
So what type of professional learning is needed to help teachers develop professional connectedness? Two important features are proposed from previously
developed models of professional learning. First, reciprocal interactions must be nurtured to allow teachers to take responsibility for each other’s learning. Effective professional learning needs to be a social enterprise with peers relying on the expertise and support of one another to adopt innovative change (Galzer & Hannafin, 2006). With the model of collaborative apprenticeship ranging from introductory to mastery phases proposed by Glazer and Hannafin (2006), it was found that reciprocal interactions are influenced by a number of factors, with culture and cognition being the two most relevant to discussion here. With culture, a successful mentoring relationship can provide a strong role model in relation to professional learning and with cognition, a lack of knowledge may cause an individual to seek solutions and thus trigger reciprocal interactions.

Second, communities of practice must be developed. Chalmers and Keown (2006) argued for the importance of a “communities of practice” approach to professional learning. This approach should incorporate a constructivist learning approach with teachers engaged in a “sense-making” process, building new knowledge on existing knowledge. However, they warned that designers of professional learning experiences should not lose sight of the importance of the social dimension with teachers learning best when they have opportunities for both dialogue and action within a like-minded community. Importantly, it takes time to develop a vibrant community and so teachers in remote locations need to be offered sufficient “connection” to allow this sense of community to develop.

It is clear from these models that effective professional learning is strongly dependent on reciprocal interactions and a sense of community. Models of professional learning that include face-to-face communication between teachers have been shown to achieve these outcomes (e.g., Henderson, 2007). The problem for teachers in remote locations, where they may be hundreds of kilometres from another teacher, is the difficulty in taking advantage of opportunities to meet face-to-face for such professional connections. The use of ICT to deliver professional learning offers some flexibility by making opportunities for engaging in reciprocal interactions and community building more accessible for geographically isolated teachers. However, Chalmers and Keown (2006) warned that care should be taken to use ICT effectively to foster professional dialogue.

For those teachers who cannot meet routinely in “real” spaces, “virtual” (online) spaces may provide a solution allowing them to interact and better develop a sense of professional connectedness. Transformative professional learning, supported by the use of ICT, is proposed as a solution to the professional learning needs of teachers in remote locations.

**Transformative professional learning**

To foster reciprocal interactions and a sense of community, there needs to be opportunities for teachers to mutually engage in their learning. Henderson (2007) developed a blended (face-to-face and online) professional development model, based on this premise that allowed teachers to explore ideas together, and to identify as members of a community of practice. Case studies showed that investment in reciprocity (valuing the participation of others) and social engagement (face-to-face and facilitated by online participation) resulted in a more cohesive community. Thus transformative professional learning is likely to be more sustainable over time if it incorporates community of practice cohesion.

Apart from the need to develop a sense of community, research has shown that a transformative model for a professional learning experience should incorporate: (i) becoming more aware of pedagogical beliefs that inform classroom practice; (ii) forming relationships that give rise to collegial and critical discussion about pedagogy; (iii) using the classroom as a site for pedagogical investigation; and (iv) reflecting on changes in beliefs (Prestridge, 2007).

A model based on these transformative professional learning principles provided a suitable starting point for a professional learning model for teachers in remote locations. However, to compensate for the difficulties in participating in face-to-face meetings to provide the necessary connectedness with other teachers, the model needed to include the use of ICT to provide support structures and networks to facilitate communication between groups of teachers.

**Transformative Professional Learning Model**

First, a five-phase Transformative Professional Learning Model (Figure 1) applicable for teachers in any geographic location is proposed. Then in the context of the project being described in this paper, the ICT-based features that were added to the model to support the development of connectedness for teachers in remote locations are described.

In the proposed transformative approach outlined in Figure 1 the bolded entries in each phase represent general descriptions applicable to a variety of professional learning experiences and the links between the phases in the model represent the commitments teachers need to make to progress through the experience. This model addresses the Prestridge (2007) transformative learning requirements as follows: becoming more aware of pedagogical beliefs that inform classroom practice in Phases 1 and 2; using the classroom as a site for pedagogical investigation in Phases 3 and 4; and reflecting on changes in beliefs in Phase 5. Forming relationships that give rise to collegial and critical discussion about pedagogy is a requirement that should be addressed throughout the five phases of the model. Also, the earlier-mentioned transformative professional learning needs for reciprocal interactions and a sense of community, should be addressed throughout the five phases and be an integral part of teachers forming relationships. It is in the need to form relationships, i.e., develop professional connectedness, that the geographic isolation of teachers in remote locations makes meeting face-to-face challenging and so ICT-based support was added to a number of phases in the model to nurture these relationships. Before the nature of the ICT-support used with this model is described the context of the project is outlined.
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**The project context**

The national project *Social Computing Enhancing Learning in Rural and Remote Australia* (Reading, Fluck, Trinidad, Anderson & White, 2008) linked together, as a community of practice, teachers from remote schools in five different Australian states. The teacher learning was focused on the use of social computing tools to enhance student learning and was facilitated by the use of social computing tools. Completion of the five phases in the Transformative Professional Learning Model was spread over a six-month period and specific project events were developed that assisted teachers to accomplish each phase. The non-bolded entries in each phase in Figure 1 represent the focus for that phase during the project. The events, with a focus on the use of videoconferencing, were designed to develop reciprocal interactions between the various teachers and also between the teachers and university-based critical friends. The only face-to-face meetings of project participants were visits to the remote schools by the university critical-friends to assist with detailed planning and with evaluation of the implementation. Together, the school-based teachers and the university-based critical friends were encouraged to develop a sense of community.

**ICT supporting the model**

The challenge in the project was how to assist the teachers by providing the necessary professional connectedness in their remote locations. ICT was used as much as possible to connect the Australia-wide teachers with each other and with their critical friends. Basic asynchronous use of ICT included a website to share information, a Wiki to collect evaluative comments after each phase and email for day-to-day communication during management activities. However, to increase the potential to develop professional connectedness videoconferencing was designed into the model to synchronously connect the teachers during Phases 1, 2 and 5.

In Phase 1 the teachers connected to an “awareness raising” videoconference session where they were introduced to the power of social computing tools to enhance student learning and were expected to introduce their own school context, including desired outcomes from the project. In Phase 2 the teachers connected to a “select learning experience” videoconference session where they introduced their initial planning for the social computing tool choice and how that tool was to be used to achieve the desired outcome for their school. In Phase 5, after the in-school planning and implementation, the teachers connected to a “reflect and share” videoconference session in the sense of moving themselves and their fellow teachers forward in their knowledge about the use of social computing tools to enhance learning. These videoconference sessions were facilitated by the university-based critical friends and dialogue between the teachers was encouraged. Professional connectedness was also encouraged by the informal use of videoconferencing to connect the teachers with university critical friends during Phases 3 and 4.

Some support for professional connectedness that did not depend on ICT was also provided. Most importantly, the university critical friends travelled to the schools, during Phase 3 and Phase 4, to engage the teachers in professional dialogue in-situ. This proved to be valuable to the teachers who normally only had few, if any, colleagues available on a day-to-day basis for such professional exchanges.

**Evaluation of the model**

Overall, the strong focus on videoconferencing to support the implementation of the Transformative Professional Learning Model in remote Australia was considered successful. However, to inform improvement of this model for future use consideration of both technical and participatory learning perspectives of the videoconference experiences are important. From the technical perspective, these cross-state videoconference connections were less seamless than had been anticipated. Recommendations to improve the quality of the videoconference experience included: increase bandwidth, improve visual quality, reduce connectivity costs, improve technical service, open up system security, develop clear protocols, and develop expertise with own equipment (Reading et al., 2008). Since the project, technology has evolved and these issues may now be less limiting.
From the participatory learning perspective, these videoconference experiences were professionally stimulating for the teachers. The most rewarding aspects of the connectedness of these sessions, shared by teachers in their evaluations are: “in real time with real people”; “being able to link with like minded people across Australia”; and “seriously, it made me feel part of a larger interest group”. Having one focus, “social computing to enhance learning” for the group brought them together for conversations despite the fact that the teachers were from five different state education systems and varied from teaching in Year 1 to Year 12.

**Future improvement to the model**

It is recommended that future implementation of the Transformative Professional Learning Model (Figure 1) include more use of videoconferencing to connect teachers. From the evaluations it was evident that teachers benefited from the videoconferencing sessions more as their technical expertise in using the system increased and that teachers felt professionally isolated during Phases 3 and 4 when they did not have scheduled videoconferencing sessions. While Phases 1, 2 and 5 should continue to have events attached that bring a larger group of like-minded remotely-located teachers together, Phases 3 and 4 should be expanded so that smaller groups of teachers are connected who have a particular sub-focus within the project. The opportunity for sustained reciprocal interactions throughout the project, rather than just at the outset and conclusion, would improve the professional connectedness of the teachers in their professional learning quest.

Education institutions, such as universities and government organisations that provide professional learning experiences for in-service teachers in remote locations should consider basing these on a transformative professional learning model that is strongly supported by ICT, especially videoconferencing. A potential focus for researchers is to study how best to utilise videoconferencing to maximise the connection of teachers in remote locations. Strategies to bring professional learning to these teachers in their school contexts, and to provide opportunities for them to engage in sustained interactions and to develop a sense of community with other education professionals, are critical to increasing the professional connectedness of these teachers.

**REFERENCES**


**BIOGRAPHY**

**Chris Reading** is a senior lecturer at the University of New England and is the Associate-Director ICT-Education of the SiMERR National Centre. She has a variety of research interests in ICT Education including using ICT to support teacher professional learning, videoconferencing to enhance learning, and student engagement with ICT-supported learning.