The tyranny of remoteness: Changing and adapting pedagogical practices in distance education.

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Abstract
Distance Education (DE) learning environments are considerably different to those of typical classrooms where students engage on a face-to-face basis with their teachers and peers. In remote settings, these face-to-face opportunities are limited and sometimes nonexistent. This investigation focuses on the influence of new technologies on the pedagogical practices of teachers and their students in remote DE settings. A place pedagogy framework was utilised to consider the changed practices of DE teachers using satellite communications for lesson delivery. Findings of the study detail the initial hopes and aspirations of these teachers, the realities of their new practice and the challenges and demands of teaching in DE settings.

Introduction

Australia is a diverse country—not just socially and culturally—but also geographically. Although a large proportion of the Australian population live in capital cities along the east coast, approximately one-third reside in communities outside of capital cities (Australian Bureau of Statistics, 2008). In remote areas of Australia, schooling is often considerably different in nature and context than that of the experiences of students in cities, or indeed in regional areas. Although there seems to be an adequate number of schools to cater for students, irrespective of where they live, school children of all ages from rural and remote areas are disadvantaged in terms of access, the availability of transport, levels of family income support, and even the quality of education they receive (Human Rights and Equal Opportunity Commission, 2000). In terms of equity and student performance, Australian students living in remote areas consistently performed below the Australian average on measures of mathematics achievement (Ministerial Council for Education, Employment Training and Youth Affairs [MCEETYA], 2005). The classifications of rural and remote are generally associated with geographical position, population and distance from urban areas. Students, especially those in primary grades, studying in remote settings are commonly more than 3 hours from their nearest local school and sometimes much further than this (Stokes, Stafford, & Holdsworth, n.d.). Along with the challenge of distance, students and teachers face problematic technology and communication issues, minimal face-to-face contact between students and their teacher, not to mention a range of social issues associated with living in rural and remote areas (Lowrie, 2007).

For students studying in distance education settings, most face-to-face interactions are limited to students' attendance at "camps" or mini schools. These are generally framed around subjects such as physical education, art and drama. There are a number of reasons for such operational planning including the fact that students are accustomed to working on a one-to-one basis with their classroom teacher in the subject areas of mathematics and English. Thus, these core curriculum subjects are not typically (re)presented in dynamic, socially connected, ways. Instead, learning experiences are framed within pedagogies which use technology-based tools to foster and enhance learning opportunities and teacher/student engagement. These restricted dynamics, if nothing else, create different learning contexts to traditional classrooms where up to 30 different viewpoints are likely to be considered in any mathematics lessons.

Teaching and learning in Distance Education (DE) requires specific and different forms of pedagogical practices and student interaction than those commonly found in "typical" classroom settings. Since classroom teachers in DE have face-to-face contact with their students only four or five times per year, learning discourses and pedagogical practices require blended (typically a combination of paper-based and digital) or digital resources. Studies which focus on such pedagogical practices provide a snapshot of how new forms of communication might be enacted in the future. At the same time changes in technology, and practices using technology, have created new opportunities to analyse new pedagogical practices.

Research background

Increasingly, there are calls for teacher education programs to more adequately prepare new teachers to be abreast of the latest Information Communication Technologies (ICTs) and equip their graduands with skills that allows them to utilise new technologies into the future (Boylan, 2004) and to ensure that beginning teachers have sound technology-content practices (Crump, Tuovinen, & Simons, 2005). As remote communities gain increased access to new technologies and networks, generally through advances in satellite communications (Lowrie, 2006), those teachers working in remote settings have the opportunity to dramatically change the pedagogies currently being offered to children in these communities. It could be argued that these disadvantaged students require access to such technologies even more so than those students living in metropolitan areas—especially given the fact that their out-of-school exposure to new technologies and the internet is far more limited than their metropolitan counterparts. Therefore, teachers can utilise ICT opportunities to compensate for the lack of readily accessible resources usually found in schools and larger, more connected, communities.

With new ICTs being rapidly developed and created, these technologies not only offer choices about teaching practices and the subsequent delivery of learning opportunities but also new ways to support learners and home supervisors (those supervising the student remotely) in more meaningful partnership arrangements. Despite such advances in technology, the remoteness of some families in Australia has resulted in such access being either limited or non-existent (Crump, Tuovinen, & Simons, 2005). The student's (own) knowledge base, the supervisor's view and understanding of the learning process, and the engagement with pre-designed learning materials become more influential learning processes than would be the case in more typical classroom experiences. Thus, some of the common social, environmental, and cognitive dimensions of classroom engagement cannot be replicated. Moreover, the everyday social perspectives so influential in learning (Cobb & Bauersfeld, 1995) are restricted by the influence of the dominant medium of communication—that is, a blended or digital resource base. Consequently, teachers may feel somewhat disconnected to the students they teach. It is certainly the case that building a strong rapport with a student you only see for a few weeks in the year is extremely challenging—and while such situations could occur in any classroom–these issues are intensified in DE contexts.

With the classroom teacher having limited opportunities to provide explicit instruction, the supervisor's influence over the learning process becomes both dramatic and fundamental to the development of the learner's mathematics understandings. As Goos and Jolly (2004) argued, the structure of schools delineates the nature and scope of parental involvement with mismatches between the home-school partnership. The failure to recognise parental diversity can cause barriers within these relationships. It could be argued that teachers are failing to utilise parents to their full potential, and that additional barriers will develop as technology becomes a more influential component of the pedagogy.

International trends in DE learning have highlighted integral connections between pedagogical practice and contextualised instructional design (New South Wales Department of Education and Training [NSW DET], 2010). Essentially, it is how these dimensions are put into practice which dictates productive engagement and learning.

The NSW DET (2010) argued that as new technologies are introduced it is necessary that they are embedded within strong pedagogical principles.

This study considers the challenges of DE as new technologies and more connected communication practices influence pedagogy. Specifically, this study aims to discover the extent to which new technologies influence pedagogical practices and the way in which these practices, over time, evolve and challenge the educational focus within these learning contexts.

Method

The methodological framework for this study is drawn from Somerville's (2010) emerging 'place pedagogy'. This framework encompasses three principles: "*our relationship to place is constituted in stories (and other representations); the body is at the centre of our experience of place;* and *place is a contact zone of cultural contact*" (p. 335). Accordingly, the data collection process for this research project included collecting the 'stories' of school administrators, teachers, home supervisors, and students, who were all working and studying in a distance education setting. Other forms of representation, or artefacts, collected during the research included audio transcripts, lesson observations and focus groups. The research participants in this study were chosen from a cross section of participants which included students, parents and teachers. Given the fact that data collection involved ethnographic field work in homes, it was necessary for the parents to volunteer for participation in the study.

Participants and protocols

The school site

From an organisation perspective, schools of distance education operate in a similar manner to non-distance schools in Australia. The school site was one of the largest DE schools in Australia and was located in regional New South Wales. The school had a principal, other senior teachers and classroom teachers who were assigned to specific grade levels—with associated support staff (including resource teachers, teacher/librarians and learning support teachers). From a context perspective, DE schools are quite different to most other schools in Australia. Typically, the students would not meet (face-to-face) with their classroom teacher for more than 10 days per year—and as a consequence, teachers need to establish an important partnership arrangement with a home supervisor (in most instances, the student's mother). All home sites were provided with computers and satellite communications as part of a national initiative to redefine communication practices in these schools.

Teacher interviews

Interviews were conducted with the school principal, and with a mathematics teacher, along with informal discussion with other teaching staff who were available during the visit.

Teacher focus group

An audio-taped focus group with 8 teachers was conducted, who taught across all preschool and primary grades (including one teacher who also taught up to Middle

School Years 7-8), and including a Primary Assistant Principal, and a Preschool Assistant Principal.

Home supervisor and student interviews

Audio-taped interviews were undertaken with a home supervisor (mother) and Year 5 student, who were living on a remote property a considerable distance from a small town. Two older siblings spent extended time travelling on buses each day to attend schools in larger communities. Both older children had previously spent time being either home-schooled or schooled via distance education.

Classroom observations (school site and home site)

Observations of two mathematics lessons were also conducted: one teacher was observed conducting two separate one-on-one sessions with students (both in Year 8) via telephone; the other teacher was observed conducting a lesson with one Year 5 student via satellite.

Analysis of data

Somerville's (2010) framework of place pedagogies constituted the theoretical underpinnings of the data analysis. Within this framework, an ethnographic study was conducted at two sets of sites—namely the school site and the home site. Semi-structured interviews were analysed through the stories and experiences of the participants and collated through more informal ethnographic procedures (Hammersley & Atkinson, 2007), with formal observations that took the form of lesson studies. Both the formal and informal data collection was considered simultaneously as we analysed audio-recordings, photographs, and our notes from the respective sites. These data were categorised into themes and interrogated through researcher group discussions. Thus, the first layer of analysis summarised the respective contexts and the second layer framed these themes within storylines which considered both the respective sites (school and home) and the specific education community.

Results and Discussion

Three main themes emerged from the data analysis, namely the: (1) hopes and aspirations of the school community; (2) realities of practice experienced by the teachers and student; and (3) pedagogical and learning challenges faced by teachers and students using technology in DE settings.

Hopes and aspirations

The advent of a new form of practice provides opportunities and a sense of excitement. In the initial stages of planning and development teachers used a number of technology-based tools to enhance the learning environment and to initiate more connected classroom interactions with the students. Particular technology tools being used in the school include: Bridgit (collaborative web-based tool), Moodle (learning management system), interactive whiteboards, podcasts, and DE Voice (for providing feedback and some oral lessons). As the principal of the school explained:

> …with the increase of technologies that have been available in DE, [we have] more opportunity to provide classroom opportunities for kids via the technologies and we use that and we're constantly trying to build [on] that because the kids love to work with other kids and they love to see other kids work and in particular in the primary, parents love to see the work of other students as well, because they're constantly assessing… where their child's at. [principal interview]

The capacity for the teacher to now observe and monitor the students in their class (via video and web cameras) creates opportunities for immediate feedback in relation to student engagement. Previously, teachers were not able to see students and thus could not pick up on important gestural cues as students solved tasks. Furthermore, teachers were able to display (and post) images of other students work so that other class participants could gain insights into approaches others took to solve similar tasks. This form of communication became much more interactive and more in line with typical pedagogical practices. It is important to note however that while the teacher could "see" the students, the students were unable to see the teacher. Nevertheless, this one-way visual communication was a leap forward for classroom engagement. As one teacher reported:

> T7: So over the years that has definitely increased [access to technology] and that makes our job a lot easier because we can actually email them, we can use Moodle, and we can actually have different forms of conversation.

Crump et al. (2009) found that, overall, most teachers were positive and enthusiastic about embracing the new technology and adapting their pedagogy, "putting the technology into the background as the facilitator rather than the driver of the lesson content" (p. 5). In other words, they were able to use technology to enhance their teaching and learning materials, rather than finding that the technology was the deciding factor when preparing lesson content. Most teachers indicated that new technologies would broaden the richness of classroom interactions and engagement. By contrast, they did not assume, or consider it necessary, that increased capacity for internet use would be a beneficial supplement to satellite capabilities. Perhaps they were unwilling to relinquish more control over the learning process. This proposition was based on the assumption that the technological challenges of teaching delivery were in itself problematic and dynamic and that the lesson and content needed to be quite structured. In this way, the tool and therefore medium of delivery, was seen to be dynamic within a controlled environment. Although the teachers recognised the steep learning curve they faced in effectively utilising these new technologies, they too had a high disposition for engaging with this medium of delivery. Teachers were of the view that an increased technology capacity would allow learning material to be modified to students needs more easily or at least remain more current in their presentation.

In terms of DE it has been noted (see Crump et al., 2009) that an increased range of technology options enhanced engagement, 'interactivity' and 'connectivity' in lessons for both teachers and students. These higher levels of engagement would have appeared almost ground-breaking compared to the medium of delivery used previously including telephone conversations. In fact, the two telephone lessons observed during the research were in clear contrast to the satellite lesson—the sessions conducted by telephone were

traditional pen-and-paper worksheets, while the satellite lesson was more interactive with both the teacher and student able to observe the learning materials on the screen. As time went on, however, the realities of using unreliable technologies became increasingly disruptive and the promise of increased interactivity did not come to fruition. As the principal noted, the students missed the physicality and sense of accomplishment derived from using print-based learning materials and that it was easier to go off on tangents in the online environment.

The reality of practice

Although there is a suggestion that the use of technology improves learning more readily than using print-based materials, Guri-Rosenblit (2009) points out that "meaningful interaction" is instead the key to learning. She defines this type of interaction as a process that "stimulate[s] the learners' intellectual curiosity, engage[s] them in productive instructional activities, and directly influence[s] their learning" (pp. 111-112). Although the role of technology is 'neutral', a tool; the role of the teacher is critical—it is the teacher who decides how to best shape the curriculum for the student, who chooses the appropriate technology to facilitate the lesson, and who collaborates with the student to find real-life application of the concepts. It is understandable that teachers revert to previous ways of knowing (Cooney, 1999; Smith, 2006) when their work loads are high or when new practices fail to deliver or do not achieve intended outcomes. The following excerpts from the teacher focus groups highlight some of the frustrations:

> T2: The change has been that now we are aware of what could be available to these more [geographically] isolated children...we know what is possible, and they're not being able to access it. It means that limits, so we go back to what is a tried and true means. [teacher focus group]

> T6: There are kids that don't live far from a town, but they might be in a hilly area, and they actually, their entire household is run on a generator, so they prioritise their electricity use. [teacher focus group]

> T7: And family values as well. I had one little boy, and his father was up on the roof, dishing the snow out of the [satellite] dish so that he could have his satellite lessons, so he really did value his lessons. [teacher focus group]

During the observation of a satellite lesson, we noted a range of audio issues which altered the flow of the lessons. Before the following transcript the teacher had posed a question to the student and she had responded correctly.

> T: So Josie replied then but I couldn't hear her.

> I: Oh, right.

> T: But I could hear her changing the frequency of the – like, it went buzz for a sec. So, I know Josie's trying to talk. Josie, I couldn't hear you. Okay, I just try and call you on again Josie. Alright, do you want to say hello again? [satellite lesson observation]

With the student not receiving immediate feedback from the teacher, she felt that her response was incorrect. Furthermore, the diverted conversation (in order to ascertain

that the audio was working) not only delayed the lesson, but also interrupted the student's train of thought. The student also experienced difficulty when trying to write her answer to a question on the SMART notebook file as she had not been able to locate the equipment needed for writing on the screen:

I1: That does look hard doesn't it?

I2: Yeah. Especially the eights.

T: Yeah. I'll ask her if she uses a mouse or graphics tab and pen. But I think she's using a mouse. Alright, can you tell me – oh, you're still writing. It's a bit tricky – are you using a mouse or your graphics tablet and pen?

S: Um, I'm using the mouse. I probably should use the thing but we can't find the pen.

T: Oh, dear. Okay, it is tricky with the mouse isn't it?

S: Yes it is.

[satellite lesson observation]

The process of writing numerals with the use of the mouse made responses to questions both laborious and futile. At another point during the lesson, the file that the student was working from froze and the teacher had to re-boot the page before the student could continue working.

T: Ooops, oops! Wait on. We'll just go–hold on–don't touch anything. You couldn't wait to see what's coming up, could you? Alright, now click on your shape.

S: I was pressing the arrow keys.

T: Yes, sometimes it's a bit naughty. Okay. You can grab the tools again. [to observers] Yeah, it's a bit sensitive. See how it can take a long time – like if you were in the classroom, they would've done that by now. [satellite lesson observation]

This feedback delay combined with the slow pace at which the student was able to manipulate objects on the screen as part of working out the answer, contributed to a lack of opportunity to go beyond routine tasks:

T: Okay, so just write the sum for one of them. [waiting for child to work out answer]

[to the observers] Unfortunately, you sometimes take shortcuts, like really she should be learning to use that language and writing down the units of measurement, which is something that they're all are very bad at –

I1: Mmm.

T: they forget. Um…

I1: But you can see with this format –

T: It's very hard.

I1: …it actually makes it more difficult to do. [satellite lesson observation]

Given the harsh reality of using the new technology, it was evident that teachers were still predominately using print-based pedagogies for instruction. Where teachers have utilised new technologies, their practices have accommodated the technological advances rather than allowing the technology to lead curriculum development. As one teacher commented:

> T2: The spectrum is leaflet intake, and contact every month or so, to those that have satellite instant email, blended learning with Moodle, units sent on CD. So you've got that huge spectrum and we must continue to cater for those, in all areas, in a variety of ways. I don't think that will ever change while the gaps are there. I can't see it changing. [teacher focus group]

This approach has been established mainly due to the unreliability of access in terms of both functionality and bandwidth capacity. Additionally, many of the technology-based resources promoted a drill and practice mentality where students were more inclined to guess answers rather than think through the mathematical processes or were using technology-based tools (such as a mouse) for purposes for other than what it was designed for (i.e., drawing on the screen without a pen). There is also the view that even reliable technology resources (e.g., Moodle) needed to be presented in a blended form. To this end, even when teachers encouraged students to use the technology—or when students utilised it due to its availability—it fragmented or even restricted learning opportunities. From a zone of cultural contact perspective (Somerville, 2010), teachers encouraged the use of technologies not because they were necessarily the most appropriate form of technology, but because they offered a shared contact experience. This rationale had much merit since it helped personalise learning contexts. Similarly, students utilised the technology resources to substitute for the lack of tacit connectivity—and the inappropriate or cumbersome use of the technologies perhaps added to the frustrations of the distance divide. The notion of difference (Somerville, 2010) was played out with teachers wanting students to use the relevant technologies (in one case a digital pen) with a student compensating for not having the resource available (they had misplaced it) by using a mouse when realistically it would have been much easier to simply type the numeral on a keyboard. Furthermore, these tensions created a "void-like" space which established an emptiness which exasperated the already challenging time loss associated with slow connectivity and unreliable internet services.

According to Somerville (2010), *place* and *space* are considered collectively since it is not possible to interpret one without the other. Indeed, the shared space of teacher and student—which was established through online engagement—could be considered a point of connection or a bridge between "spaces". However, the contextual space inhabited by the student could not be easily understood since the teacher (despite the technology) was so removed from what was actually happening.

Challenges and demands

Generally, teachers felt they needed to utilise the technologies provided irrespective of the pedagogical benefit. Thus, the utilisation of these technologies for new teaching practices is one dimension of *changed* practice however a less obvious but more salient

dimension of technology remains in the background. This dimension involves practice changing expectations where students, parents and other members of the education community expect instantaneous and seamless communication because the technology is now available. The focus group discussions revealed an underlying challenge for teachers and the school with demands that moved well beyond the fixed school day:

> T8: You might get emails where they're demanding you to do a phone lesson, or whatever, because they didn't turn the generator on in time, not thinking that you've got 14 other children that you're supposed to be dealing with right now…that you're supposed to be dealing with in the next hour, and their child didn't turn up, and they were supposed to. [teacher focus group]

> T7: And then we had the ones that wouldn't buy the cartridges to put into the printers or pay for the paper, even though we supplied them with the satellites and everything else. They wanted the printers, the cartridges supplied, and they wanted the paper supplied. [teacher focus group]

> T1: And sometimes we'll say it's coming, you know, this is what you are going to be getting, so therefore they do expect to be getting it straight away, not realising that there might only be one poor old technician that has to service everybody. Other times it's just an awareness, look guys, this is out there, but this is just for your own information. [teacher focus group]

Although it could be argued that all teachers face similar experiences in their professional lives, these challenges are more confronting in a DE environment since there are so few opportunities for face-to-face contact with the students and their parents. As Somerville, Plunkett and Dyson (2010, p. 42) recognised, "the intersection of multiple, and often contested, stories in a contact zone of difference" creates a new space (i.e., the technology) which potentially results in a loss of meaning or engagement—especially when transformation is not possible. This is certainly the case in distance education environments.

Conclusions and implications

Distance Education is at the forefront of communication initiatives and technological advances (Guri-Rosenblit, 2009). However, the lack of reliable connectivity (largely brought upon by the tyranny of remoteness) constrains pedagogical opportunities that are commonly afforded to teachers and students living in metropolitan areas. The findings of this study revealed a disconnect between the essentialness of implementing a communication medium that fostered engagement and a practice that (currently) is not attainable to those teachers and students who need it the most. In other words, the most advanced ICT's are essential for DE learning and yet the implementation of such environments is far more attainable in metropolitan areas.

Three themes emerged from the study. It was certainly the case that teachers and other members of the DE community had high *hopes and aspirations* for the advent of new technologies. Despite the time consuming process of reframing learning opportunities and indeed the curriculum to accommodate a new learning environment, teachers were more than willing to dedicate the time to incorporate the digital technology into their

practice. However, the *realities of this changing practice* took hold quite quickly. Although our findings showed that teachers embraced and certainly welcomed new communication opportunities, it was evident that they were increasingly putting technology in the background as they came to terms with the pedagogical challenges of utilising unreliable technologies. Consequently, the *demands of teaching in DE settings* outstripped the capacity to engage with new forms of communication.

Distance Education schools of today could be considered as a window into what all schools may look like in 30 years time. That is, learning environments that are not bounded by structures (including four walls) that have been present for hundreds of years. Nevertheless, it needs to be acknowledged that it may be fruitless to use DE settings (despite the obvious need for these learning environments to be technologically rich) as "pilots" for new technological advances. The changes to pedagogical practices are enough of a challenge for teachers without the burden of the technology failing. Classroom teachers require professional development opportunities that better equip them to utilize the satellite technologies now available to students in these isolated areas. Indeed, they need permission to reject the technology when it does not value add to their current pedagogical practices.

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