Co-constructing new understandings of online learning environments through critical reflection

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A postgraduate unit offered by Curtin's Science and Mathematics Education Centre (SMEC), designed for the professional development of practising teachers, was developed in accordance with the referent of social constructivism. Two years ago, web-based modes of communication, including email and an online discussion room, were introduced to supplement existing 'paper and mail' distance education materials in order to facilitate richer student-tutor and student-student social interactions.

Those involved in this program have developed new understandings of working in and with online learning environments through critical reflection of their own work and their experiences. With reference to interview transcripts, notes from meetings, email correspondence, commentary in professional journals and other print-based and online documents, this presentation describes the development of an online learning environment mapping critical issues that mark new (co)constructed and at times competing levels of understanding, especially in the context of mutual inquiry, grounded in personal experiences of using online technology as an environment and as a context for teaching and learning.

Introduction

David Hamilton once said 'research is a voyage of discovery with most of the time spent at sea' (1992). Studying and using computer mediated communications (CMC) in distance education is also a voyage of discovery and as Bates indicates, this often requires a 'leap of faith' (1997) in the sense that we do not know nor can we predict how things will pan out in this environment: there are a multitude of varied, though interrelated factors playing significant roles in whether the 'outcome' and indeed the process is considered a success or a failure by individuals and by groups involved. This essay is a voyage of discovery, which attempts to chart selected individual and group understandings of what seems to work in teaching and learning a postgraduate unit in science and maths education.

Beginnings: an account adapted primarily from professional journal entries

Peter teaches a postgraduate professional development unit for teachers in the distance mode. The main aim of this unit is to enable students to develop 'the ability to reflect critically on their beliefs and values as they struggle to make sense of new ideas that urge them to break with traditional teacher centred approaches to teaching.' As a teacher of this postgraduate unit Peter felt that he should model a teaching methodology which empowered his learners in the belief that the teachers participating on the course would then reflect this methodology in their own classrooms with their own learners. However Peter felt constrained and believed his students' learning was impeded by the intellectual and social isolation of distance learners. It was almost impossible to empower his learners within the constraints of the print medium of the unit which he believed could only reinforce 'a passive and compliant learning style.' He wanted his students to be able to contact each other easily to discuss ideas and work through critical issues. He wanted to encourage students to collaborate with each other, by exchanging drafts of their assignments. He wanted to provide immediate feedback to students' work in their assignments. However, delays associated with the postal service restricted the number of possible exchanges he could make with his students and those they could make between themselves. Peter also found that phone contacts, instead of initiating reflective discussions, made it relatively easy for students to reject prematurely, the viability of new ideas that did not seem to fit comfortably with their own thoughts.
and practices. In effect Peter's desire to empower his students was thwarted by paper and distance.

The solution took the form of a 'virtual learning community' developed by Peter and David (then a full time PhD student and tutor in the unit). Within this virtual learning community the students and tutors could engage in public and private reflective discussions via the Internet. Students were given opportunities to: take part in public discussions with fellow students; send and receive private email communications between the tutor and students and from student to student; access study materials as well as links to computer-based services, including the library information and retrieval service and world-wide educational databases. This gave the students an opportunity to receive different points of view and time to digest and respond to the differing opinions on a more considered basis, and this improved the quality of ideas and opinions shared. The Web, and in particular, the discussion, resource and module sections, have become core components. Peter feels this shift in unit development and delivery has the potential to empower students participating in the unit and to position their 'knowledge at the heart of the learning process'.

**Reflections on the program**

Students reflecting on their experiences in using CMC indicated that they had not previously felt part of a community of learners in previous studies in the distance mode, using predominantly print-based materials; and that the online environment had provided opportunities to: a) break feelings of isolation, b) communicate regularly (and often for the first time) with fellow students and, c) learn from each other. Examples and an elaboration of some of these findings were described in papers presented at the ASCILITE and GASAT conferences (Taylor et al., 1997; Geelan & Taylor, 1997). In this paper, a selection of issues is raised.

1. **Hybrid communications**

In setting up the web environment, the tutors were unsure how best to use the online discussion forum to attain 'the pedagogic goals we had set ourselves.' The tutors valued student discourse from a social constructivist perspective; that students would construct their own knowledge, more effectively if they communicated with each other and with their tutors. But it was recognised that the online environment is a hybrid form of 'talking-by-text' combining some of the linearity of text with the interweaving of open and critical forms of conversation: CMC is different and as such privileges a different and quite unique discourse (Geelan et al, 1999). As one tutor pointed out:

> This is a very distinct and fertile environment. ... it requires a different way of working as a teacher and a different way of studying for students. ... We started not knowing how we would go about doing what we wanted- to get students involved in a rich discourse.. we weren't sure how best we could facilitate appropriate discussion ... not quite understanding the quality of that discussion or what it would require to keep it going. It's been very much a learning process for all involved - for the tutors and the students. Our experiences in particular incidents of discourse have provided us with new understandings and insights. Last year the richness of the discourse was limited in part this was due to the way we as tutors lead the discussions rather than stimulating and facilitating the discussions, I think we lead too strongly. ... this year we've done things differently and students have taken far more responsibility for the interactions online. ... students have a strong commitment and desire to participate in the discussions.

The sheer volume of interactions in second semester this year is worth noting - over 500 separate inputs with the majority of interactions occurring between students (Stapleton et al, 1999). As David, one of the tutors pointed out 'this compares very favourably to the 30 interactions in the entire unit in the earlier offering in 1997. This semester 60-80 interactions often followed any single discussion activity' and this was between seven students and two tutors.

David felt the main reasons for this disparity were firstly, that students were required to post and interact online: this compulsory requirement constituted 25% of the total semester mark for the unit. Secondly, the set activities during the semester, required student responses. Thirdly, the various 'hot button' issues, topics that everyone wanted to comment on stimulated interaction. For example, one student raised the issue of whether classes should be streamed by ability and with students as practising teachers, all had a view to express. Posting past students' assignment papers online for present students critically, to comment on also stimulated considerable debate.
2. Modelling and facilitating discussions - finding the right balance

Searching for appropriate models in the use of CMC has been the focus of discussion and research for more than ten years, for example Mason and Kaye (1990) and Eastmond (1995) describe CMC offering new opportunities for dialogue and debate as well as offering a real sense of community and interaction, stimulating active learning. But getting the right balance in attaining the required levels of interaction is not easy. In the first year, the tutors encouraged students to participate by providing a model of how they hoped students would interact. Early discussions tended to be dominated by the tutors whereas in the second year, the students were dominant and lead informal open discussions. The tutors monitored these interactions and noted that students were forming mutually supportive groups. Student interactions were typified by: sharing and comparing ideas, providing feedback to each other's ideas, and searching for group solutions to issues. But there was little contestation and critical discourse between students. Peter outlines the open discussions were often along the lines of: 'This is what I think' ... 'What did you mean by that? Do you mean this?' ... 'Oh yes, sorry, I wasn't clear' variety. By critical discourse, Peter continues, 'I mean being critical of other people's standpoints, other readings, previous students' assignments posted online and being critical of themselves.' At this point in the semester, Peter was concerned that critical discourse was not occurring (Taylor et al., 1999). Later he reflected that these open discussions were a necessary precursor to more critical discourse. To engage students in critical discourse, the tutors decided to role model a dialogical discourse - the intertwining of open and critical aspects of discourse in a friendly and supportive manner. In this way, the tutors had to select when to interject into the discussions and at what level should their input be made. Choosing an appropriate time, level and language to use was not straightforward and could not be successfully produced in any simple recipe style format.

3. Can a leopard change its spots?

Central to studying this unit are the terms separate and connected knowing and understanding. 'Separate knowing is characterised by an objective, critical and adversarial stance whereas connected knowing is based on empathy and a willingness to suspend judgement' (Dawson et al, 1999). The tutors through dialogical discourse online intend to help students enrich their world view, their rationality, epistemology and values. The aim of the tutors is to broaden and enrich students' experiences and the sense they make of their experiences as learners and as teachers, moving them toward an epistemological pluralism of constructed knowing, an integration of separate and connected ways knowing. The big question is how to create a truly pluralistic epistemology in the web-based environment and not simply to provide a forum for students to reinforce their extant standpoints.

Another member of the team is more sceptical about the possibilities and wonders whether students can embrace multiple epistemologies .. and whether it is desirable in the first place, or ethical, since shifting how individuals think and learn 'can be very uncomfortable and destabilising,' especially working in this 'sensory deprived environment, disconnected from the real world. ... There's something very disturbing about being so fundamentally challenged. ... The very basis of one's understanding of the world is questioned. ... It's like pulling the rug from under people's feet'.

Is this as one researcher pointed out 'the worst medium for communicating' complex and sophisticated discourse? Is trying to shift student's epistemological underpinnings just too big a task, especially at a distance using this very new, mostly unknown and very different way of communicating? Does the combination of new online learning environments and the aim to enrich students' ways of knowing just too radical and does it put students under too much pressure? In addition, to trying to work effectively in this environment '... the new function of the teacher resembles that of a midwife, one who "assists in the emergence of consciousness" and who focuses not on his or her knowledge but on the knowledge of the students' (Schroeder, 1996, p. 5 quoted in Dawson, 1998).

4. Time involvement and marking balances

Time involvement, both on the part of tutors and students in the online discussions has been very high. The present combination of marked activity in the unit is 25% Discussion Room interactions and tasks and 75% written assignment. But since interactions have been and continue to be so rich and so time consuming, requiring more writing, thinking and reflecting than conventional print-based assignments, is this mix unfair and inappropriate?
Conclusion

Working successfully in an online environment where tutors and students interact frequently and regularly is complex and requires participants to acquire many new and unique skills in writing conversationally and interacting carefully in a 'sensory deprived' communications environment. 'Knowledge evolves in dialogue'. When the dialogue fails or isn't progressing at appropriate levels then a stimulus is needed to guide learners into more productive ways of interacting.

References


