A LEARNING ECOLOGY FRAMEWORK FOR COLLECTIVE, E-MEDIATED TEACHER DEVELOPMENT IN PRIMARY SCIENCE AND TECHNOLOGY

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CERTIFICATE OF AUTHORSHIP / ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Signature of Student

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Abstract

This thesis reports on the development and testing of a framework for making sense of the collective professional learning of primary Science and Technology teachers in an e-learning mediated context.

Web-based networks and collaboratories are playing an increasingly prominent role in private and public sector knowledge building and innovation. In Education, online communities now frequently support teachers' professional learning. However, despite the pervasiveness of this network zeitgeist, such studies rarely describe or analyse (let alone theorise) teachers' collective learning, focusing paradoxically instead on the learning of individuals, albeit in group contexts. Without a clear understanding of collectivity, the design of initiatives for systemic professional renewal is significantly impeded.

This investigation addresses this urgent need to describe, analyse and theorise teachers' collective learning. Serendipitously, an Australian Research Council Linkage Project, DESCANT (SciTech), provided a context that confronted those ethical, theoretical and pragmatic challenges necessary to make collective learning both possible and likely. Cohorts of primary Science and Technology teachers, supported by consultants, Education Department officers and University researchers, worked together, in networked ways, to conceive, prototype and trial an e-learning environment for the professional development of cohorts of their peer teachers. Democratic participation was assured, a generative theory of learning adopted and pragmatic steps taken so as to establish a principled, yet experimental, trial for studying collective learning. Group learning at every stage of this process was documented, and examined for ethical, theoretical and pragmatic evidence of collectivity. That is, judgements were made as to whether the learning that occurred at each stage of the project could be understood as a complex, dynamic learning ecology.

The study's findings reveal that collective professional learning did occur, to a greater or lesser extent, at every stage of the DESCANT process. Furthermore, the collective learning of these teachers could be well described and explained by considering how those ethical,

theoretical and pragmatic challenges - the pillars of the learning ecology framework developed here - were met. The account makes clear just how complex, dynamic, highly nuanced and ecological in nature collective learning is. It was then a small step to theorise systemic professional renewal in terms of collective conceptual movements on an adaptive (learning) landscape and, in the light of what occurred, to extrapolate, speculatively, from the generative theoretical pillar with which the study began.

Of course, this study has acknowledged limitations. Nevertheless, its successful small-scale piloting of a learning ecology framework for making sense of collective, networked professional learning demonstrates that the framework has a range of epistemic benefits - not least, internal and external coherence. As well, it provokes thinking about key characteristics of networked approaches to collective professional learning. Above all, this study suggests the worth of continuing to test and refine this learning ecology framework in those diverse settings where systemic renewal is critical.