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Facilitating a Blended Learning Community:

A Collaborative Approach to Professional Learning

A thesis presented in partial fulfilment of the requirements for the
degree of

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ABSTRACT

This thesis has researched the question of “How can blended learning communities be facilitated to support the professional learning of inservice teacher educators?” Inservice teacher educators work to build teacher capability with the ultimate goal of raising student achievement. This relatively small group of people work across large geographical areas and are having increasing difficulty meeting the demands of the teachers. In addition, inservice teacher educators’ contact with teachers is often less frequent than is desirable to ensure sustainable shifts in practice. However the growth in internet-based collaborative tools has meant that different ways of communicating are being created at exponential rates. Due to the natural limitations on inservice teacher educators’ work, innovative ways of sustaining the professional development they provide are becoming increasingly important.

The action research project described in this thesis has investigated one of these innovative approaches; not towards shifting teacher practice but focusing rather on improving the practice of the inservice teacher educators themselves. Five inservice teacher educators known as Isteam (Inservice teacher educators at Massey) formed a professional learning community to investigate the use of blended learning communities which use a combination of both face to face and online learning environments. While this thesis discusses how blended learning communities can be facilitated to support the professional learning of inservice teacher educators, Isteam themselves investigated the potential of using both blended learning communities to support the professional learning of teachers they worked with.

Isteam met physically face to face on regular occasions and carried on their learning virtually between meetings through an easily modifiable webpage

environment known as a wiki. This thesis discusses how these two environments wove their relative strengths together to build the professional learning of Isteam in ways that far exceeded the possibilities of using one or other learning community on its own.

Research findings indicate that blended learning communities require early phases of building knowledge and social relationships, and that developing pedagogical capability relies on these building blocks to be in place first. Blended learning communities worked most effectively to improve the professional learning of inservice teacher educators when the facilitator:

1. Provided a range of online and face to face opportunities for inservice teacher educators to build their professional knowledge and gain confidence and competency in using online collaborative technologies, particularly in the early phases of the community's development.
2. Engaged inservice teacher educators in a range of online opportunities, including non task-related activities, to develop social relationships and get participants 'talking' comfortably online.
3. Challenged inservice teacher educators to use their growing knowledge and social relationships as platforms for critically reflecting on their professional learning and practice issues.

As a result of these findings, the inservice teacher educators involved in this research project are now strengthening the communities they have already established to ensure they grow to their full potential, and are mentoring other colleagues to develop their own blended learning communities in response to requests for help. Blended learning communities have piqued the interest of inservice teacher educators at Massey as having powerful potential to embrace the demands of working in the 21st century.

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DEDICATION

For Paddy

You helped us understand the true meaning of community my friend.

Thank you for allowing us to be part of your journey;
we were truly privileged.

We only wish it could have ended differently.

Arohanui.

Rimu rimu

Rere ana

Korowai aroha e

Wrap me again

In bright weed

Which will be

A blanket for me

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CHAPTER 1. INTRODUCTION

- 1.1 Chapter overview
- 1.2 Background to inservice teacher educator work
- 1.3 Inservice teacher educator use of Web 2.0 at Massey
- 1.4 Instep and the research project background
- 1.5 Research question
- 1.6 Structure of the thesis

1.1 CHAPTER OVERVIEW

This chapter provides an introduction and background for the research project which is inquiring into this question: **“How can blended learning communities be facilitated to support the professional learning of inservice teacher educators?”** The chapter begins with a context outline to help understand the nature of the work the participants of this research are involved in. This context outline will firstly give an overview of Ministry of Education’s expectations of the School Support Service work in New Zealand schools and the work done by inservice teacher educators (ISTE) who deliver this contract. Following this I will give a brief background of the experiences ISTE at Massey have had with Web 2.0 environments (see glossary) since being introduced to them in 2007 and the implications of this experience on the direction of this research.

Background detail about the particular foci of the ISTE who were participants in this research project will follow on from this general introduction. This leads into some discussion about the research project itself and the rationale for the choice of this topic being examined. I will identify and discuss the research question and highlight the significance of this research to the work of ISTE. Finally, the chapter concludes with an overview of the thesis structure to show how the research project will be discussed.

1.2 BACKGROUND TO INSERVICE TEACHER EDUCATOR WORK

ISTE are employed to work with teachers to help improve their practice and thereby improve the achievement of students in their classrooms. This section will explain the nature of the work done by ISTE who support teachers in New Zealand schools. I will follow this with a more detailed look at the specific work done by the participants of this research group.

1.2.1 MINISTRY OF EDUCATION SCHOOL SUPPORT SERVICES CONTRACT

Within the contract that the Ministry of Education has with universities to provide professional support for teachers, it states that the government's overarching goal is to "transform New Zealand into a knowledge-based economy and society (Ministry of Education, 2007b, p. 2)." To contribute to this goal the ministry has contracted New Zealand universities to carry out work with teachers and school leaders in our publicly funded schools. ISTE are employed to provide this professional development for teachers and school leaders across the country.

The "overall mission" of the Ministry of Education in this contract is to: "raise educational achievement and reduce disparity with an outcome to build a

world leading education system that equips all New Zealanders with the knowledge, skills and values to be successful citizens in the 21st century” (Ministry of Education, 2007b, p. 3).

Nationally, ISTE are expected to build teacher capability with the ultimate goal of raising student achievement. They are required to develop and strengthen the capability of teachers through the following actions:

- challenging existing beliefs
- encouraging the gathering and interpreting of data to inform decisions
- using evidence informed inquiry to help understand their impact on student learning
- raising subject and pedagogical content knowledge
- developing inclusive school cultures
- developing effective learning communities
- planning for sustainability of learning

ISTE are employed across a wide variety of output areas to achieve these actions: developing leadership and management strengths; quality teaching particularly within New Zealand Curriculum (Ministry of Education, 2007a) learning areas and in Māori medium environments; national initiatives such as education for sustainability and gifted and talented; and special projects to support the Ministry of Education’s identified areas of concern. Across all of these foci, the Ministry of Education offers guidance around ways to manage the professional development process to ensure it is effectively delivered. Particular expectations of ISTE (Ministry of Education, 2007b, p. 4) that relate to the research project described in this thesis are to:

- use research including the findings of the Teacher Professional Learning and Development (TPL&D) Best Evidence Synthesis to inform the development of professional learning programmes
- promote the development of a culture of professional learning within and between schools that focuses on student progress and achievement
- factor into programme planning how developments will be sustained in schools over time
- build professional capability of advisors/facilitators

1.2.2 ISTE WAYS OF WORKING AT MASSEY

The geographical area covered by the ISTE who work for Massey University's Centre for Educational Development is the central part of New Zealand's North Island. This area is bounded by Hawke's Bay on the eastern coast, New Plymouth on the western coast, Wairoa in the north and Palmerston North at the southern boundary. ISTE involved in the early childhood sector have another contract that includes work in the Gisborne area which is further north of Wairoa.

Within the contractual expectations outlined earlier, ISTE build the professional learning of teachers in a variety of ways. Memorandums of agreement are drawn up between Massey and the schools for work that aims to build leadership, build communities of learners, develop personal knowledge or focus specifically on teaching and learning. Levels of support can range from in-depth professional development where ISTE are frequently in the school and the work is over a long period of time, to consultancy work that focuses on specific problems or issues that require very few visits.

In the main, ISTE work with teachers and principals although they employ a variety of strategies as part of their professional development practice. For example, ISTE use face to face meetings, workshops, one on one discussions, modelling of good practice, and they observe and critique teachers in classrooms to build their understandings of practices that could improve student learning outcomes.

Increasingly professional learning communities are being used as a key way to encourage the sustainability of the professional development. These professional learning communities provide opportunities for teachers to collegially grow their own learning rather than more traditional approaches where participants passively acquired knowledge from other sources. However there are difficulties involved in getting teachers together on a regular basis to develop professional learning communities so other ways of achieving this recognisably successful strategy needed to be explored. I will now discuss some of the work that was being done in this area prior to the initiation of this research project.

1.3 INSERVICE TEACHER EDUCATOR USE OF WEB 2.0 IN 2007

In 2007, Skype (internet-based phone calls with video capability) and wikis (a web-based flexible learning site) were introduced to all ISTE at Massey University as a potential way of addressing the problems encountered through the geographical spread of the schools in the region. During that year, I also explored and developed a teacher professional learning community that had an online component using a wiki as well as some face to face meetings, although this form of professional support met with limited success. This section will discuss the results of the introductory work done

with ISTE and the exploratory work done with teachers. The impact of this work on the Web 2.0 tool choices for this research will be identified.

1.3.1 QUESTIONNAIRE FINDINGS

ISTE at Massey were asked to complete a survey at the end of this introductory year (2007) to identify the level of adoption of Web 2.0 tools and strategies (in particular wikis and Skype) and the ways these technologies were being used to support ISTE practice. While this questionnaire focused on the level of use people were making of these tools, at that stage it did not ask about how ISTE felt about their potential application in professional learning communities.

One section aimed to identify the barriers and needs that prevented wider use of Web 2.0 tools as it was recognised that these barriers needed to be understood and addressed. This data, which informed the research question for this thesis, is briefly presented here to indicate the baseline schema of the body of people from whom the research project participants were taken.

Prior to 2007 wikis had been used by 9% of ISTE but by the end of that year 70% had used them. For 58% of this group this meant they had used other peoples' wikis in some way, although 35% had actually constructed their own.

When asked what the major barriers were to effectively using these technologies in their work, responses were able to be grouped under the following headings:

- Technology (37% of comments) – Connectivity was seen as a major barrier especially as most ISTE did not have mobile wireless access at that point.

- Time (33% of comments) – time to learn and practice, planning time to connect with others, time to check on progress; in general they realised they would need to prioritise time if it was going to work.
- Technical knowledge (13% of comments) – Although they wanted to use the tools, they recognised they didn't know what to do if something went wrong.
- Failure to see a purpose (13% of comments) – Wikis were not high on their priority lists because they couldn't see how they would support their practice.

When asked where ISTE would like to go next with this development, comments showed they were generally willing to take advantage of Web 2.0 tools – “I would like to use wikis for communication within a community practice,” but needed support to overcome the hurdles – “perhaps a skilled ‘buddy’ to connect with at first to coach me ‘one on one’.” A few comments such as “I would like to prepare a wiki to ...share best practice” and “work toward establishing and facilitating across schools that use Skype and wikis,” show that some ISTE were thinking broadly about the learning opportunities these tools could provide.

1.3.2 TUAKANA-TEINA PROJECT

During this introductory year I ran a special project known as the *Tuakana-Teina Project* where I used a combination of an online learning environment and face to face visits to support several teachers. In a Maori view of learning, the term ‘tuakana-teina’ refers to the supportive relationship between older and younger siblings and it is how the younger or less experienced person is expected to build their knowledge and in turn, be able to pass it on themselves. In the *Tuakana-Teina Project* I had asked a small

group of technology teachers to work collaboratively and share their practice in an online environment (wiki) with the hope of growing their capabilities. These teachers were also asked to work as lead teachers by supporting one other teacher in another local school to try to improve their practice. It was hoped that they would discuss their work online as a way of supporting each other and provide opportunities to grow knowledge and skills through this collaboration.

At the beginning of this project, the participants spent two days face to face aimed at building their knowledge so they could do the work being asked, but apart from this meeting, the rest of the development was done through the wiki and Skype. There were individual meetings with the ISTE and the participants, but never as a whole group again.

While most of the participants exceeded their expectations with regard to supporting the technology teacher they worked with, there were many problems with the online way of working. I spent long hours working online trying to encourage and support the individual teachers, and got very minimal response. I also worked face to face with each teacher participant where they freely talked about their work; however when I encouraged them to record their talk online for the others to see, again the response was minimal. While I questioned why this was happening despite many changes in the approaches I had used to encourage contributions, there was no clear indication of the underlying reasons. The outcomes of this work became the motivation for the choice of this research question.

In summary, the lack of success of using the wiki environment to support teachers to learn collaboratively, combined with the keenness of the ISTE who had adopted Web 2.0 technologies, set the parameters for my research problem. ISTE were keen to build their professional development practice using these tools but that meant that work needed to be done to ensure they would be more successful than I had been, otherwise the use of Web 2.0

would fail to support teachers' professional learning and ISTE would revert to older practices.

ISTE questionnaire responses (2007) highlighted that there was a clear need for professional support to enable effective use of Web 2.0 tools. The barriers they identified were clear and this gave a starting point for the help that would be needed. There was also some suggestion that the current practice of ISTE needed to be challenged, and these opportunities combined to form this research project.

The following section will discuss the structure of the research project and identify the participants who were involved.

1.4 INSTEP AND THE RESEARCH PROJECT STRUCTURE

The research project described here was part of Massey University's involvement in the national INSTEP (Inservice teacher education practice) research project. The national INSTEP project set out to "investigate gaps in our knowledge about effective ISTE practice" (Ministry of Education, 2008, p. 9). ISTE from across the country participated by investigating aspects of their practice with a view to building "an important knowledge base that (would) inform and strengthen a principled approach to the professional practice of teacher educators" (Ministry of Education, 2008, p. 10). The shared findings from these contributing INSTEP projects have uncovered "compelling evidence of the value of adopting an inquiry approach for the development of practice" (p. 10).

The INSTEP project stemmed from the recognition that there was a paucity of research into the work of ISTE at a national and international level and that there was a need to investigate how to improve the practice of this group if there was going to be a change in teacher practice and ultimately

achieve the Ministry of Education's goal of raising student achievement. The INSTEP project had already been operating for a year when my research project began and findings from the previous year had refined and improved its structure so as to be more attuned to the needs of ISTE.

Massey University encouraged their ISTE to be involved in the INSTEP project and expected participants to collaboratively examine their own 'puzzles of practice' and challenge their thinking through sharing findings, discussing research and monitoring the impact on their work. The research project underpinning this thesis was one of the contributions.

1.4.1 ISTEAM GROUP

Within the INSTEP project, five Napier-based inservice teacher educators formed a professional learning group, initially to investigate the potential of using online learning communities to support the professional learning of teachers that we worked with although this question changed to focus on blended learning communities. The participants of this research project adopted the name '*Isteam*', an acronym for 'Inservice teacher educators at Massey'. This acronym will be used to refer to the collective group in this research project. This group formed because they had a common interest in finding out about the use of Web 2.0 to enhance their work, although one member was recruited as she was new to the job and had 'inherited' a previous web-based community from her predecessor.

Isteam worked predominantly in the primary education sector, although one worked with a small number of secondary teachers and one worked totally with early childhood teachers. Isteam worked in a variety of the output areas within the School Support Services contract described earlier, although the early childhood ISTE provided similarly focused professional development through another contract. One Isteam advised in literacy and had a 'Leadership and Management' role (Assessment for Learning), one was

involved in a 'Schooling Improvement Project' using literacy as a focus, one worked to develop quality teaching within the 'Numeracy Project' and one worked in the 'Early Childhood' contract. I worked in learning areas (Technology and E-learning), and a national initiative (Education for Sustainability), although this work was not included in this research project.

Isteam's particular contracts committed them to delivering professional learning according to a set format involving regular (once or twice a term) pre-planned face to face workshops which were followed up with in-school/centre visits. For example, the Assessment for Learning ISTE was obliged to provide two workshops per term and one in-school visit; the Early Childhood ISTE had one workshop per term and two centre visits. While this may have restricted their flexibility, the advantage was that their teachers expected to belong to some form of professional learning community as part of their professional development. Isteam had their teacher forums or clusters already in place before the research had begun.

Isteam's region was large as outlined earlier and it was the need to cover such a geographically spread out region while increasingly being expected to work in more than one output area that sparked their interest in finding better and more efficient ways of working with teachers. Some introductory work with Web 2.0 technologies had already occurred within Massey University College of Education (see previous section) and this approach was suggested as a step towards improved ways of supporting teachers' professional learning.

1.4.2 INSTEP AND THE ISTEAM PROJECT

The research project discussed in this thesis manifested itself at two levels. Firstly, there was the INSTEP question that Isteam were investigating about the ways blended learning communities could be used to support the professional learning of *teachers*. Alongside that there was the INSTEP

question that I was investigating about the facilitation of blended learning communities to support the professional learning of *ISTE*. My research project aimed to support Isteam in their question (see figure 1 below). These two projects worked alongside each other in a symbiotic way to build understandings of both ways of working and the environments that were worked within. I will now outline these two projects so the reader can see their interconnectivity and identify the different parameters of each one.

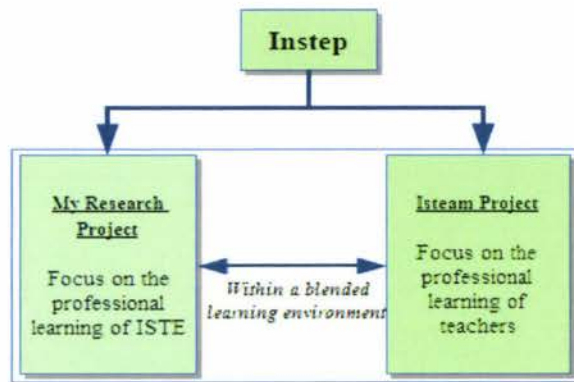


Figure 1 INSTEP relationship to this research project

Developing learning communities is a relatively new approach for *ISTE* who had until recently used face to face meetings to *transfer* information to the participants, but research was strongly suggesting that this approach was outdated and needed to change (Timperley, Wilson, Barrar, & Fung, 2007). The combination of the need to work more effectively with teachers and the encouragement to be involved in the INSTEP project created the opportunity to research the use of Web 2.0 environments in our work.

The five *ISTE* who wanted to find out more about using online learning communities to support their practice decided to become part of this national INSTEP project to take advantage of the structure and support this would offer them. Their intended project clearly addressed the four Ministry of Education (2007b) expectations of *ISTE* mentioned earlier (section 1.2): it was using research to inform *ISTE* actions with teachers; it promoted a

culture across schools focused on student achievement; it addressed issues of sustainability; and of particular relevance to this project, it was aimed at building the professional capability of ISTE. As one of the five ISTE in that group, this provided the setting for me to research a parallel project to identify how to facilitate blended learning communities, which use a combination of face to face and online environments, to support the professional learning of ISTE.

1.4.3 INSTEP AND MY RESEARCH PROJECT

The second part of this INSTEP project which is the research written about in this thesis was built on the work described above. With my prior experience of trying to run an online learning community and enough technical experience to be a useful problem solver, I was well placed to become a mentor to the Isteam to help them with their work. While still functioning within the INSTEP framework, I reworked Isteam's question for my purposes so that I could investigate the best ways of facilitating blended learning communities to support the professional learning of ISTE. By doing this I could be useful to the work they were doing while looking at their actions through the lens of my own facilitation of ISTE practice. Through scaffolding their shifts in understanding and knowledge growth in both online and face to face environments, I hoped to be able to understand the key characteristics of effective collegial facilitation and how it differed or mirrored each other in the two environments.

Both projects were working in blended learning environments which meant as I developed new understandings these were fed into their projects and as Isteam developed new learning from their projects this fed back into my research (see figure 2). As Isteam's knowledge and confidence grew through the facilitation provided (my research project), they in turn facilitated their teachers through similar processes which was the aim of their project.

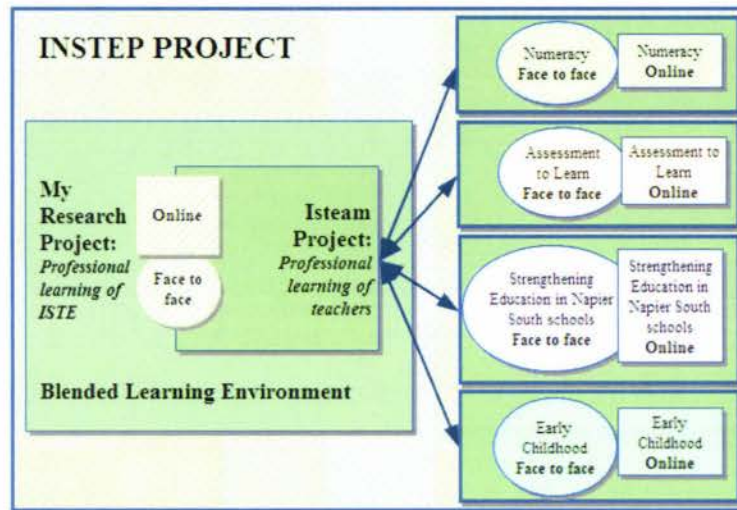


Figure 2 Structure of research project

1.5 RESEARCH QUESTION

My research question was: **“How can a blended learning community be facilitated to best support the professional learning of inservice teacher educators?”** In my research, I was supporting Isteam’s professional learning as they grappled with their similar but teacher-focused question.

The blended learning community I facilitated involved regular face to face meetings at least monthly and an online collaborative workspace (a wiki) to provide the online learning component.

Through unpacking the results of the work with ISTE it was hoped a clear understanding of blended facilitation practice would emerge. This research question was appropriate because understanding the best blended learning

approaches for ISTE would ensure they would be successful themselves with their teacher support work.

To help answer the research question, the following questions needed to be investigated:

- What are the characteristics of effective professional learning?
- What are professional learning communities?
- What is an online learning community?
- What is a blended learning community?
- What is the role of the facilitator in blended learning communities?
- How do effective blended learning communities evolve over time?
- What is social software and how can it be used to support professional learning communities?

Investigating these concepts guided the literature review and the research project itself. The thesis presented here has been correlated with what the literature says in answer to these questions and shows how my work either supported or differed from the currently available findings.

1.5.1 SIGNIFICANCE OF MY RESEARCH

Over the recent past, Massey has provided minimal professional learning support for ISTE that aimed to improve *their* practice; instead the focus has been on teacher professional learning. However since the university's involvement in INSTEP this model has begun to change. During regular meetings across the region ISTE are now beginning to look at their practice and some steps are taking place towards reflecting on the way we work.

Work done with a small group such as this is not generalisable but the findings of the research reported in this thesis could be of interest to other ISTE as well as teachers wishing to develop learning communities with their students, at all levels of the education system. This research could provide valuable information for the universities who employ ISTE as they plan their professional development programmes. The Ministry of Education may find synergies with what I am saying as they consider their expectations of the professional learning support work ISTE provide.

1.6 STRUCTURE OF THE THESIS

There are five chapters to this thesis including this introduction which provides an overview to the research project and background to ISTE's use of online learning communities in their work to support teachers. This chapter sets out the rationale and research questions and concludes with the significance of the research.

Chapter Two, the literature review, takes the reader through the various current understandings of professional learning communities, with particular reference to how they are used in education. Underpinning pedagogical approaches and facilitation ideas are contrasted to understand how the framework for the analysis of the qualitative data emerged from this reading. This chapter ends with a discussion about Web 2.0 to ensure there is a shared understanding of what this is, and why wikis were selected for this project.

Following on from the literature review, Chapter Three outlines and justifies the use of the emergent action research methodological framework, and the multiple methods approach employed to gather and analyse data are

discussed and justified. Ethical considerations are explained as well as the measures taken to ensure validity and reliability of the research.

Chapter Four presents the research findings obtained through both quantitative and qualitative data from the questionnaires, document analysis of the wiki and thematic analysis of the meetings. The meeting and wiki findings are reported under headings that emerged from the research project.

Chapter Five concludes the thesis, summarises the main findings, and explores them in relation to the literature presented in Chapter Two and the theoretical framework detailed in Chapter Three. This chapter also discusses the implications this research has for ISTE work in general, and for the success or otherwise of the use of blended learning communities for professional learning. The chapter concludes with suggestions for future research.

CHAPTER 2. LITERATURE REVIEW

- 2.1 Overview of the Chapter
- 2.2 Characteristics of effective professional learning
- 2.3 Professional learning communities
- 2.4 Effective professional learning community pedagogies
- 2.5 Online learning communities
- 2.6 Blended learning communities
- 2.7 Facilitation of blended learning communities
- 2.8 Life cycles of blended learning communities
- 2.9 Using social software in professional learning communities
- 2.10 Chapter summary

2.1 CHAPTER OVERVIEW

This research project investigated how to facilitate blended learning communities to support the professional learning of ISTE. Professional learning communities are increasingly being used by ISTE to encourage the sustainability of the professional development programme they offer to teachers, but the geographical spread of the teachers they support often means they are not able to meet face to face as often as is required to make this approach successful. A small group of ISTE at Massey identified that blended learning communities which included online and face to face elements, could be an option to address this problem, but they needed to grow their professional knowledge and understandings in this area first.

Timperley et al. say that professional learning occurs within a “social context of practice” (2007, p. xlvi). To provide this, a blended learning community was used to help the group develop rich, critical and situated knowledge around their problem. This literature review will synthesise the research findings that supported the directions taken to research this problem.

Firstly I will show how digitally situated and supported learning communities are being developed and used to enhance the professional learning of educators in general before specifically looking at the professional learning of ISTE. I will begin this chapter with a discussion of the evolution of professional learning communities and the different forms they are taking to meet the demands of the 21st century society in which we live. Through discussing and reflecting on the findings of leading research, the multi-faceted structure of online learning communities will be identified.

To be successful as learning communities rather than merely as pataka or storehouses of knowledge and resources, this multi-faceted structure needs to be carefully handled and taken advantage of through informed facilitation. The use of such environments to supplement other forms of professional development is increasingly becoming key to the success of teacher professional development, and there is a need to understand their characteristics and pedagogical approaches so we can take advantage of their potential.

Researchers have in the past debated whether either face to face or online environments could provide the necessary platforms to develop this type of outcome on their own and are now generally agreeing that a blended approach has the potential to be more effective. To facilitate the development of effective blended learning communities that best support the needs of professional educators, facilitators are required to design face to face and online environments that will both engage and challenge

participants socially and cognitively so that a depth of reflective conversation is able to flow.

Effective professional learning communities will go through continuous cycles of development that can be used to identify the needs and future directions of the community. Once again, there is little research into these in educational settings but these phases of development will be outlined to provide a framework for the findings.

Finally I will give some background into social software or Web 2.0 tools and their application in professional learning communities. Such e-learning technologies are evolving at a rate that is barely able to be kept up with, so this section will discuss the e-tools and strategies used in this thesis and justify their choice.

2.2 CHARACTERISTICS OF EFFECTIVE PROFESSIONAL LEARNING

Timperley, Wilson, Barrar, & Fung's 'Teacher Professional Learning and Development Best Evidence Synthesis Iteration' (2007) has mapped out a framework of effective teacher professional development (figure 3 below) and they say that this framework can be applied to educational communities in general. Timperley et al. say that "teacher professional learning does not occur in a vacuum but within the social context of practice" (p. xlvi). This social context helps to develop the meaning of new knowledge and determine the implications for practice as these are negotiated amongst the participants. To reach this level of negotiated new knowledge, teachers also need considerable challenge and support which requires high degrees of trust and respect within the community.

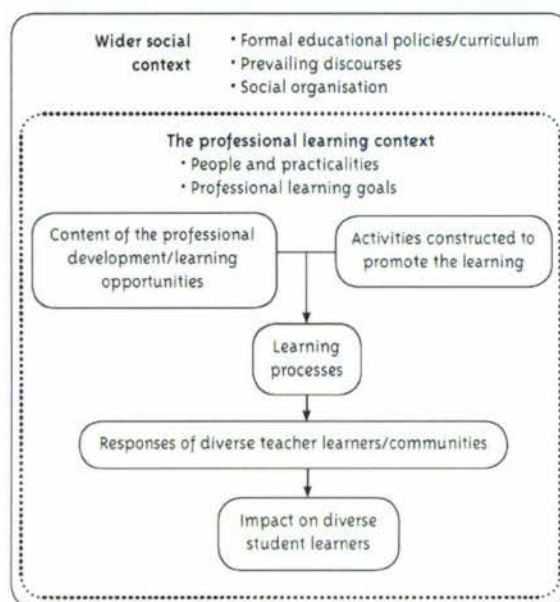


Figure 3 Framework for analysing the effectiveness of professional learning experiences

(Timperley et al., 2007, p. xxiv)

Within the specific professional learning context, the content of the professional development and the activities constructed to promote the learning impact on the learning processes and teacher learner responses. These learner responses in turn impact on the student learning outcomes. I will now briefly describe each of these aspects of the framework outlined in Timperley et al.'s research.

2.2.1 CONTEXT

Timperley et al. (2007) identified several elements within a professional learning context that were present when change in practice occurred (pp. xxvi – xxvii). These context-related elements included aspects such as the strength of the provider's pedagogical content knowledge, the presence of challenge to prevailing participant discourses, and the levels of participant engagement in the learning process.

Of particular importance to this thesis was the finding that “participation in some form of community of practice” (Timperley et al., 2007, p. xxx) was a strong aspect in effective professional development. Traditional approaches such as listening to speakers or attending one-off workshops were known to have very little impact on changing practice, yet this synthesis found that these were still commonly offered forms of professional development in New Zealand (p. xxv). Yet in communities of practice where participants were supported to collaboratively process new understandings and analyse the effect of their work, the impact on changing practice was more significant.

2.2.2 CONTENT

Timperley et al. found that “without content on which to base deeper understandings and extend teaching skills there is no foundation for change” (2007, p. xxxi). Content included a variety of types of knowledge including discipline and pedagogical knowledge. Skills were also considered part of the content base and mention was made of teacher inquiry which included analysis of the participants’ own practice and its impact on learning as the driving force.

Within the content aspect of this framework, the integration of theory and practice was a key success element, and the term ‘pedagogical content knowledge’ was used as a way of describing this. Sustainable shifts in practice were again reliant on participants’ in-depth understanding of theory and the skills of inquiry to “judge the impact” (Timperley et al., 2007, p. xxiv) of their work. The ability to collect relevant evidence and make effective use of this was important.

2.2.3 ACTIVITIES

Several activities were identified by Timperley et al. that promoted professional learning. These included engaging participants in a range of

activities that provided multiple opportunities to learn, sequencing professional instruction, and discussing and negotiating the understandings.

The sequence of professional instruction identified in this synthesis began with a catalyst that became “a powerful reason to engage with new information in sufficient depth to change their practice” (Timperley et al., 2007, p. xxxviii). New information was front-loaded early in this process and a range of activities helped to translate new knowledge into practice. These activities needed to provide repeated opportunities to revisit and refine new knowledge and practice.

One of the behaviours Timperley et al. found that was crucial to professional learning was the discussion and negotiation of understandings. Without engaging the understanding of what participants currently believed, “new practice was likely to become layered onto existing practice, not replace it” (p. xxxix). Through negotiating and debating meaning and testing evidence of its effectiveness, participants created mutual understandings of new knowledge and achieved more effective practice.

2.2.4 LEARNING PROCESSES

Effective professional learning processes combine such elements as grounding learning in real practical problems, deepening relevant professional knowledge, and building on and challenging existing theories that were able to support the participants' inquiry process. Timperley et al. (2007) found that the learning process needed to be both collective and personal if participants were to make effective use of these elements and “adjust their practice” as a result (p. xlii).

The trend towards using professional learning communities to support teacher development is strongly embedded in the framework described here as the following section will now show.

2.3 PROFESSIONAL LEARNING COMMUNITIES

The term 'professional learning communities' is just one label assigned to groups of people that are formed to work collaboratively to inquire into, reflect upon and improve the effectiveness of their practice. Different terminology is used by others ranging from 'communities of practice' (Wenger, McDermott, & Snyder, 2002) to 'communities of inquiry' (Garrison & Anderson, 2003; Garrison & Vaughn, 2008), and 'professional learning communities' (Stoll et al., 2005).

This section will now be briefly define the terms 'communities of practice', 'communities of inquiry', and finally, 'professional learning communities' to help explain why this last term was used for this research project.

2.3.1 COMMUNITIES OF PRACTICE

Etienne Wenger, a key international figure in the discussion around the value of communities of practice (CoPs) for professional learning, defines 'communities of practice' as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (2008, website page).

Wenger says there are three crucial characteristics for communities of practice which need to be developed concurrently:

- Domain - members have an identity defined by a shared domain of interest. A commitment to the shared interest helps to identify them as a group.
- Community – members build relationships that help them interact and learn from each other.

- Practice – members are practitioners who share a repertoire of experiences, ways of working, strategies etc., which have taken time to develop.

Wenger argues that members of communities of practice are “informally bound by what they do together” (Wenger, 1998, p. 2). The members are the ones who determine the direction of the learning, based around an issue that is relevant to their practice and domain. In a similar vein, Hara (2000) says that CoPs are “informal networks that support professional practitioners to develop a shared meaning and engage in knowledge building among the members” (p. 11). As all members are constantly learning new skills, the diverse range and level of experience will support the creation and growth of new knowledge.

Lai et al. (2006) add that the “process of learning and the process of membership in a community are inseparable” (p. 10). This comment is based on the situated learning theory underpinning Wenger’s (1998) conception of learning as a sociocultural phenomenon. Wenger takes into account the physical environment, the people involved, the purposes of the learning and the resources available. Wenger argues that learning is a way of becoming part of a community, and that there is no separation between social participation and learning.

2.3.2 COMMUNITIES OF INQUIRY

Garrison and Vaughn (2008) who have worked in-depth with online and blended approaches to improving the learning opportunities for tertiary students, use the term ‘community of inquiry’. Separating their work from Wenger’s is the focus on the course related reason for the group forming and a strong teacher-student, outcome driven approach. The purpose of their communities is to develop reflective thinking to generate new learning but around a predetermined focus. As well as this, they catered for an

inflexible group of specific people. Nevertheless, their arguments align with other forms of educational learning communities.

Based on earlier work (Anderson, Rourke, Garrison, & Archer, 2001; Garrison & Anderson, 2003), Garrison and Vaughn have identified three elements of communities of inquiry; social, cognitive and teaching presence. They argue that unless social and cognitive presences are designed, planned for and built through the teaching presence, the learning experiences of the participants will not be successful.

Garrison and Vaughn define these elements as follows:

- **Social presence** is “the ability of participants ... to project themselves socially and emotionally as real people...” (p. 28). Within this presence, open communication and group cohesion are developed and projected through personal/affective expression conversation.
- **Cognitive presence** is “the extent to which learners are able to construct and confirm meaning through sustained reflection and conversation in a critical community of inquiry” (p. 28). Within this presence, a cycle of triggering event, exploration, integration and resolution occurs.
- **Teaching presence** is “the design, facilitation and direction of cognitive and social processes for the purposes of realising personally meaningful and educationally worthwhile learning outcomes” (p. 29). Within this presence, facilitators design, organise, and facilitate conversation and directly instruct.

Garrison and Vaughn’s diagram represents the way all three elements interconnect within a medium that supports professional learning.



Figure 4 Community of Inquiry (Garrison and Vaughn, 2008, p. 18)

2.3.3 PROFESSIONAL LEARNING COMMUNITIES

In “Ki te Aoturoa,” a publication describing a research project that specifically focused on the work of ISTE, the Ministry of Education (2008) described an education-based professional learning community as the “context in which people involved with and concerned about schooling work collaboratively to learn how they can improve student learning” (p. 195). Despite finding similarities between ‘professional learning communities’ and other terminology, Ministry of Education (p. 196) did identify six specific characteristics that seem to be typical of effective professional learning communities:

- Commitment to learning for all
- Collaborative relationships among community members
- Shared values and vision
- Reflective and iterative inquiry
- Participation in networks and partnerships
- Commitment to sustainability and capacity building

The Ministry of Education (2008) suggests this list of common characteristics has significant impact on the practice of ISTE. For example, ISTE need deep knowledge of effective pedagogical approaches in order to be able to model these approaches in their own practice. They need experience of collaborative relationships that they can draw on so they can support the development of these in others. Being able to stimulate and support others as they use evidence to examine their practice may be a skill they need to develop in themselves first. Access to knowledge around the most up-to-date best practice requires that ISTE themselves are involved in wide reaching learning communities to build their own capacity. And if ISTE wish to ensure they build capacity and sustainability into their work, they must establish learning communities that give them an understanding of the change process and capacity building they require first hand.

Timperley et al. (2007) also found several characteristics of professional learning communities. They found that they helped teachers to analyse the impact of their teaching on student learning. Professional learning communities use artefacts to “ground teachers’ deliberations in the realities of practice” (p. 204) and activities such as collaborative planning, peer observations and shared analysis of student evidence help to guide this analysis process.

Despite this range of terminology, the Ministry of Education (2008) found that, “many of the characteristics they identify and the learning principles on which they rest seem to be similar” (p. 195). They also found that this applied regardless of the context; whether this was in schools, with inservice teacher educators, or at government level.

The work discussed in this thesis uses the term ‘professional learning communities’ in preference to other terms. The social context for this group was that of educators working to solve problems that emerged from and

related to their own practice rather than trying to gain course related knowledge. The Ministry of Education (2008) has defined this term within an education-based context and specifically related it to the work of ISTE. The six characteristics of effective professional learning communities outlined by the Ministry of Education (2008) directly related to the way this group wanted to work with teachers. Developing and understanding these characteristics would help the group be able to transfer these into their own practice.

The next section will explore the best ways to facilitate professional learning communities to ensure these characteristics are effectively developed and utilised.

2.4 EFFECTIVE PROFESSIONAL LEARNING COMMUNITY PEDAGOGIES

Although Timperley et al. (2007) argue that a key element of successful professional development is the development of teachers' ability to inquire into the effectiveness of their practice, traditionally a model of knowledge transmission has been the expectation and practice of both ISTE and teachers (Lai et al., 2006). Timperley et al. say that some of the most powerful shifts happen when teachers' prevailing discourses are challenged; when they actually recognise that their current practice is not "optimising students' learning opportunities" (p. xlvi). They argue that for teachers to recognize gaps in their practice and take cognisance of these, a high level of reflective thinking must occur. Within a learning community, connections to this type of thinking need to be overtly encouraged and facilitated.

Garrison and Vaughn (2008), whose research challenges the teaching and learning approaches used in tertiary education, say that if professional learning communities are to go beyond merely accessing and assimilating

information, participants need to “collaboratively explore and reasonably question organisation and meaning of subject matter” (Garrison & Vaughn, 2008, p. 15). Inquiry-based learning, a “question driven search for understanding and a collaborative experience” (Garrison, Kanuka, & Hawes, 2002 webpage), is also used to generate evidence into the impact of changes in practice which then helps to motivate continued improvement. They say that this requires an inquiry-based learning community which will be both reflective and collaborative, and participants will have the flexibility and freedom to construct their own meaning and confirm their understanding.

Garrison & Vaughn found that effective professional learning communities emerge from environments where learning is situated and authentic, doing so by engaging teachers in collaborative tasks using practical classroom examples to challenge them to evaluate their practices and beliefs about teaching. Facilitators’ and teachers’ roles blend within effective professional learning communities as every member learns to contribute and reflect, becoming co-learners in the process. The stronger the engagement, the more likely participants are to use instructional strategies that align with “constructivist and collaborative” teaching pedagogies in their classrooms (Lai et al., 2006, p. 24).

These concepts of ‘inquiry’, alongside that of developing the social nature of education or ‘community’, are two ideas essential to higher learning. While Garrison & Vaughn (2008) found that relationships did not have to be an outcome of a successful community of inquiry, they did find that sustaining such communities relies on “purposeful and respectful relations that encourage free and open communication” (p. 15). They also found that higher levels of inquiry need both reflection and discourse and that these need to interact at both personal and public levels so that participants will feel comfortable to open themselves up to “scrutiny and critique” (p16).

Having the time and opportunity to reflect is often best done at a personal level without the group's expectation of a quick response, but the synergy and challenge of working collaboratively in a group generates the conversation necessary to unpack individual understanding and build knowledge.

The following section will describe the characteristics of professional learning communities that are located in online rather than face to face environments and show how they can be designed to meet the pedagogical challenges described above.

2.5 ONLINE LEARNING COMMUNITIES

The rapid development of internet-based technologies has "greatly enhanced the development of communities online" (Lai et al., 2006, p. 14), enabling people to "share their expertise, experiences and knowledge" (p. 14) with ever increasing audiences. However it is the collaborative nature of the more recent Web 2.0 technologies (see section 2.9) that has distinguished online *learning* communities from earlier 'portal of information' communities that used web-based technologies such as Blackboard and WebCT (<http://www.webct.com>). The goal of these information communities was to "provide or transmit information to its members" (Lai et al., 2006, p. 18). In contrast, Web 2.0 technologies allow participants to instead "focus on practice and creation and sharing of knowledge" (Lai et al., 2006, p. 18) and become active *learning* communities.

Situating teacher professional learning communities in online and blended environments may be a relatively new professional development approach but as the growing consensus of research is showing, 'one-shot' professional development models (e.g. seminars and workshops) are no longer effective

in solving real practice-related teacher problems which tend to be “messy and defy technical solutions” (Lai et al., 2006, p. 23). Lai et al. suggest a shift in this emphasis is needed, away from acquiring knowledge and towards “learning in practice [where teachers take an active] personal responsibility for their own professional growth and development” (p. 49).

While online communities have seen a rapid growth in the past few years (Lai et al., 2006), few have managed to actually provide more than just a portal for the acquisition of information and ideas. Potter (2004) found that exchanging information or content was the most common and successful form of online interaction, but he also found that this ‘exchange’ thinking “significantly limited participant capacity to engage in the active learning process” (p. 80).

Annan, Lai and Robinson (2003) add that traditional professional development approaches are not going to shift teacher thinking towards the type of reflective practice needed to alter their teaching schema. To achieve this, they feel facilitators need to first get teachers talking and then try to raise the level of talk towards ‘challenging’ talk about “making changes to existing practices, based on previous analysis and critique” (p. 33). However, Ball & Cohen (1999) found that face to face school-based cultures do not commonly support conflict, inquiry or challenge, making collegial talk *about learning* difficult to achieve. In online environments, as Potter (2004) found, this is even more difficult as participants may not be familiar enough with each other to develop the sense of community necessary to feel safe to express themselves emotionally or to develop group cohesion.

An ongoing debate that surfaced in Lai et al.’s (2006) literature review was whether or not communities of practice could be *totally* supported in an online environment. Two issues drove this concern; whether online environments allowed sufficient trust to be built amongst members, and

whether “tacit knowledge and practice” (p. 49) could be shared online. Trust takes time to develop and is built when participants know each other, an easier achievement when members are physically able to meet. As online learning communities have tended to be limited by the intermittent nature of engagement, this has impacted on the opportunities for building relationships (Lai et al., 2006).

Without a communal sense of trust, members may not be prepared to share their practice with others in the group. Some researchers (e.g. Lueg, 2000) argue that tacit learning, which they define as learning ‘to be’, is an important aspect of teacher professional learning and has to be situated where the learning occurs. This raises doubts about whether online environments can provide opportunities for this to occur. Other researchers (e.g. Garrison & Vaughn, 2008) however suggest this is able to be overcome through careful design of the online environment.

Lai et al. concluded their literature review by pointing out the paucity of examples of educational use of online learning communities. They suggested there was a real need to investigate how the internet could be used to build the capacity of teachers through involvement in professional learning communities. Lai et al. also recognised that the design of effective online professional learning communities may require a blended (using a mix of both online and offline activities) approach.

The following section will now discuss this concept of blended learning communities, where use is made of both face to face and online environments to support professional learning.

2.6 BLENDED LEARNING COMMUNITIES

Literature is now emerging to suggest that online professional learning communities may be just part of the possible solution to developing reflective practice (Garrison & Vaughn, 2008; Lai et al., 2006). Garrison & Vaughn suggest using technology for technology's sake should be viewed with some scepticism but they consider blended learning, a "thoughtful fusion of online and face to face learning experiences" (p5), to be a viable way to achieve effective results.

Blended learning communities offer both online and face to face experiences and are becoming a significant presence that provides 'contact and convenience' (Garrison & Vaughn, 2008, p. 26) for both the leaders and participants of such groups. Such communities might use face to face meetings to build relationships and engage with new information, as well as an online environment such as a blog or wiki to "rethink the educational experience" (Garrison & Vaughn, 2008, p. 30) and sustain the learning between meetings at times and locations suitable to the participants.

Blended learning communities are more than just face to face *and* online learning communities; they are a synergetic coalition of the two environments that takes advantage of the strengths of both. For example, sustaining the group is comparatively easy in face to face communities as they form a sense of community relatively quickly (Garrison & Vaughn, 2008; Lai et al., 2006) but this is a challenge in an online learning community due to the length of time it takes to develop the confidence and trust to engage. In a blended community however, the "complex weaving of online and face to face communities" (Garrison & Vaughn, 2008, p. 27) allows participants to flow through permeable boundaries, forming the sense of community in one environment and reflecting and sustaining it in the other.

Much of today's professional development in education has tended to be facilitator driven using behaviourist pedagogical approaches (Ministry of

Education, 2008). Such approaches expected participants to “increase, eliminate, shape or improve behaviour” (Ministry of Education, 2008, p. 186) as a response to ‘stimuli’ such as modelling of good practice. Learning communities aim to “collaboratively construct core concepts and schema based on important ideas and information” (Garrison & Vaughn, 2008, p. 30). Blended learning communities are forcing a rethink of this traditional behaviourist model (Garrison & Vaughn, 2008), redesigning themselves to align more with collaborative co-constructivist pedagogies. Such pedagogies draw on cognitive psychology (Bruning, Schraw, & Ronning, 1999) which says “learners actively construct knowledge by confronting and solving problems” (Ministry of Education, 2008, p. 189). These pedagogies also make use of the work of social constructivist theorists (e.g. Vygotsky, Bruner) in their assumption that social, cultural and personal processes are central to learning and development.

Face to face learning experiences tend to be collaborative before they are reflective as the spontaneity required of open discussion impacts on capacity for deeper thinking (Garrison & Vaughn, 2008). Online environments are predominantly asynchronous in nature providing time for reflection and rigour (Garrison & Vaughn, 2008) over time for collaboration. By blending these inherent strengths, participants benefit from a learning community that is both reflective and collaborative. Garrison & Vaughn say that this new approach has led to a measureable shift in both process and outcome.

2.7 FACILITATION OF BLENDED LEARNING COMMUNITIES

Both Wenger (Wenger, 2008) and Garrison and Vaughn (Garrison & Vaughn, 2008) whose views were discussed earlier, identify elements of professional learning communities that the facilitator needs to be aware of and ensure are present if the group is to be effectively learning. Wenger

identifies that a sense of community and domain must be designed for, while Garrison and Vaughn suggest social and cognitive presence are elements that have to be created through an effective teaching presence. This section will now compare and contrast these views to develop a platform for the work that was done in this research project.

2.7.1 COMMUNITY/SOCIAL PRESENCE

Wenger (2001, p. 225) made the following challenging statement about learning:

Learning cannot be designed. Ultimately, it belongs to the realm of experience and practice. It follows the negotiation of meaning; it moves on its own terms. It slips through the cracks; it creates its own cracks. Learning happens, design or no design.

Wenger is not suggesting here that learning *communities* cannot be designed; more that the learning itself “can only be designed *for* – that is, facilitated or frustrated” (p. 229). With regard to learning communities, Wenger says “there are few more urgent tasks than to design social infrastructures that foster learning” (2001, p. 225).

To give some perspective on Wenger's comments, Schwen and Hara (2003, p. 11) say, “Wenger argues for 'minimalist' design, allowing the communities to find their natural levels of identity and learning as a result of well-nurtured conditions.” As stated earlier, Wenger's concept of communities of practice is exemplified by informal groupings and learner-driven domains with flexible boundaries allowing members to come and go at will. Learning in these domains is based on practice, so the idea of 'designing' the learning is incongruous with this thinking, although provision of Schwen and Hara's "well-nurtured conditions" is a role the facilitator needs to be cognisant of.

The work of Wenger (2001) strongly recognises the need for a social climate to exist if learning is to happen. Gorodetsky (2007) too says that there needs to be a 'social argumentative context' (p. 7) for learning to occur, so when designing the learning community for social context, a key challenge is to create a climate that supports open and respectful communication. For Wenger this is about the participants building the relationships that engender this trust and respect so they can interact and learn from each other.

Garrison and Vaughn's (2008) 'communities of inquiry' concept on the other hand is a much more formal arrangement structured by the teacher and one where learning is developed through 'teaching presence'. The covert goal of this learning is to pass the course (assessment rubrics are a tool of such communities), though obviously by raising the level of metacognitive thinking through the collaborative conversation of the community. Members of such communities are there for a purpose and don't tend to move away until the finite timeframe of the course or programme is complete.

Again there is a recognition of the importance of social climate; a requirement of trust as well as "a willingness to collaboratively engage within a community of learners" (Garrison & Vaughn, 2008, p. 89). It is their view that in a face to face or public environment, participants are often hesitant to challenge and engage in critical conversation with colleagues, whereas they are more comfortable doing this privately in front of a computer. However without the "physical cues and vocal intonations" (Garrison & Anderson, 2003, p. 52) available in face to face environments, other inferior 'tones' of communication such as capitalisation or emoticons are usually resorted to with doubtful effect and a higher potential for misinterpretation.

In addition to facilitating a climate of trust and open communication in such communities, Garrison and Vaughn say a facilitator must provide opportunities for purposeful collaborative conversation using activities

designed to allow participants to connect with each other. They suggest activities such as building chat rooms, creating personal profiles or working in small groups both online and face to face, to establish expectations for the community.

At times, Garrison and Vaughn (2008) suggest, facilitators will need to 'manage' the environment to ensure that all participants are actively taking responsibility for their learning. Collaborative projects will encourage participants to develop self-directedness and learning journals will foster self-reflection. They suggest that these types of activities will build a cohesive, sustainable group where members will engage in meaningful, higher quality discourse.

2.7.2 COGNITIVE DEVELOPMENT

A social collaborative context forms the necessary conditions for teachers to construct professional knowledge through discourse (Gorodetsky, 2007). However, to move discourse from social to cognitive, Garrison & Vaughn say it needs to go hand in hand with critical reflection, collaboration and inquiry (2008). Facilitators of professional learning communities need to develop "cultures of inquiry" (Toole & Seashore Louis, 2002) in order to "focus on critically examining practice to improve student outcomes" (p. 247). According to Toole & Seashore Louis, this collaboration does not mean creating a comfortable place for sharing ideas, more the creation of opportunities for rigorous investigation of practice.

In order to examine practice, participants need to explore data from a range of sources and interpret it as useful evidence to inform practice-based decisions. Ministry of Education (2008) says that "being an educational leader means stimulating and supporting people as they examine their practice in relationship to evidence about its impact" (p. 199). Blended environments allow facilitators to "model inquiry-based learning" (p. 199)

both online and face to face, and challenge participants assumptions and beliefs through helping them to make sense of their data.

Designing inquiry-focused activities that are problem-based and driven by questions are suggested by Garrison and Vaughn (2008) as ways to engage participants in reflective conversation. Facilitators can create opportunities to work in small groups and 'talk' about the inquiry focus. Brainstorming was one example used by Garrison and Vaughn to demonstrate the cognitive use of the blended approach. In a spontaneous and energetic face to face environment, brainstorming generates large quantities of surface level ideas and information; done online the responses tend to be fewer but more meaningful and solution focused. They argue that if the brainstorm issue is introduced face to face then moved into the online environment, participants can refine their ideas independently when they have time to be more reflective. Using the two environments in this way creates richer learning opportunities.

Garrison and Vaughn say that the facilitator needs to weave both social and cognitive presence in both environments through using stimulating questions and keeping the discussion focused if they are to move participants beyond merely exploring the issue. Listening and talking are genres that belong in the face to face context and through these the participants can acquire information and share ideas. However documenting and integrating the key ideas are genres that sit best in the online context, and the facilitator needs to model this through the conversation they provide and engage in. Ensuring reflection and rigour as well as providing opportunity for all participants to contribute are also important facilitator roles.

As has been suggested, face to face contexts are useful to introduce concepts but if the meaning is to be unpacked and expanded, then the online context will allow participants to be less inhibited and more reflective.

Online environments are suited to participants documenting and integrating their learning and it is within this environment that the focus is more on developing cognitive ideas and understanding. To ensure the inquiry process reaches a satisfactory outcome or resolution, the facilitator needs to constructively shape the conversation in these environments through more direct actions such as summarising, revising objectives and questioning; providing opportunities for metacognitive awareness to result.

The implication is strong that in Garrison et al.'s 'communities of inquiry' the participants are managed, whereas in Wenger's 'professional learning communities', participants are the managers of their own destinies. Respectful relationships are grown naturally instead of provided for, and this relationship allows the participants to ebb and flow with the knowledge they create. Facilitation of Garrison et al.'s communities need to be carefully planned ahead of time to ensure the participants are able to achieve and thereby succeed; facilitation in a Wenger community evolves with the community and opportunities are taken where they arise. The outcome is a shared resource that is useful to the participants, not a testable level of achievement.

2.8 LIFE CYCLES OF PROFESSIONAL LEARNING COMMUNITIES

Lai et al.'s (2006) literature review and synthesis mentions that there is very little in the way of empirical or long term studies that have been done to back up the suggested "evolutionary pattern of CoPs [communities of practice] development" (p. 28) and even fewer of these have been done in an educational setting. Schwen & Hara (2003) agree and say that although the later stages of development are better understood, the evolution period is not. This becomes an issue for facilitators who want to design 'healthy'

communities, as without clear models it is difficult to recognise when the development is heading in the right direction. Schwen & Hara suggest that those models that do exist tend to be “indebted to birth, development and death metaphors” (p. 263).

Lai et al.'s literature review identified several authors who have talked about life cycles in their work around learning communities. Familiar models are Palloff and Pratt's (1999) 'forming, norming, storming, performing and adjourning' cycles attributed to e-learning communities, and Wenger, McDermott, & Snyder's (2002) 'formation, growing and transformation' phases.

One business model referred to by Lai et al. was one developed by Wallace and St Onge (2003), who say that the development of a community of practice consists of only two main phases. Phase one focuses on “putting in place the foundation pieces on which the community is built” (para. 11) so the emphasis is on the community vessel itself, the infrastructure. This phase is heavily driven by the facilitator. Phase two focuses on creating value and a sense of community, and it is the community itself that is the driver. There is a continuous cycle of development, evaluation, and growth underpinned by the group's ongoing evaluation and acceptance or rejection of new ideas. During this phase the group matures and develops its own 'personality'. No reference is made by Wallace and St Onge to a 'death' phase, but they do mention transformative activities such as the forming of sub communities or community expansion as the final aspect of their second phase.

Lai et al.'s review findings aligned with Wenger et al.'s (2002) 'formation, growing and transformation' model and suggested three phases of development for online learning communities: formation, sustaining or maturation, and then either transformation or disengagement; but they

suggest that these phases are not mutually exclusive. Lai et al. do however maintain that the research suggests all communities of practice go through these phases in order.

To expand on these phases that Lai et al. identified, the rest of this section will outline patterns of behaviour that exemplify each one in the context of an online learning community.

2.8.1 FORMATION

An essential characteristic of this phase is the building of “relationships, trust, awareness of their common interests and needs” (Wenger et al., 2002, p. 82). During this phase, the community is built and roles are identified, often in face to face meetings. The issue participants want to address is defined and the problem solving process is outlined. The technology or infrastructure is developed and participants’ prior knowledge and needs are identified as each participant gets to know what others can do or contribute. Participants will be finding and sharing worthwhile ideas and building content knowledge in a rapid exchange process, as the value the learning community can offer builds over time. While there is some surface level cognitive engagement during this phase, a lot of what Garrison and Vaughn (2008) call ‘social presence’ – the progressive development of open communication, group cohesion and expression of emotional bonding and camaraderie – is evident in this phase of the life cycle.

2.8.2 SUSTAINING/MATURING

A general concern highlighted in the literature is the difficulty of ensuring the community’s sustainability which was found almost always to be more demanding than launching it. Lai et al. (2006) found that the focus during this phase was to create value – “to its members, the community and the organisation” (p. 31).

There is an almost continuous cycle of development, evaluation and growth as assessment routines are established and feedback is gathered. Feedback from both “core and peripheral members” (Lai et al., 2006, p. 31) is key to ensuring the sustainability of the online community at this point. The community finds its natural rhythm and “leaders and champions” emerge (p. 31).

During this phase a knowledge repository is built and organised and eventually the community becomes an environment for building new knowledge through the collaboration of the participants as they become responsible for the community. Lai et al. talk about this as creating ‘knowledge capital’, achieved through engagement in both face to face and online activities.

At this time there is often a formal evaluation of the progress of the learning community to suggest next steps or areas for improvement. As a result of this evaluation process, the learning community eventually enters the final phase of the life cycle.

2.8.3 TRANSFORMATION OR DISENGAGEMENT

The third phase of the life cycle of online learning communities may involve expansion, fading away or what Preece (2000) refers to as death. During this phase the community may reinvent itself through expanding, merging with other groups or changing its focus. Alternatively it might fade away or close (Wenger et al., 2002). If this is the case, one would find that discussion would begin to slow down and participants would leave, indicating the life of the community was complete.

2.9 USING SOCIAL SOFTWARE IN PROFESSIONAL LEARNING COMMUNITIES

Given that this research used 'social software' as part of the design of the online learning environment, this section will explain what social software or Web 2.0 is and then investigate a particular form of social software known as a wiki, which was used in this research. Through identifying the way a wiki is constructed and used by learning communities, it will be shown how they enable a connected approach to learning. A brief look at the underpinning pedagogical approach of wikis will help to justify why I considered these were the most appropriate medium for the asynchronous learning part of this project.

The term 'Web 2.0' describes the changing way we are using the internet. Previously the internet was used as a medium "in which information was transmitted and consumed" (Downes, 2005, p. webpage); put simply this means that people read, listened or watched online. Now Downes suggests the internet is "a platform, in which content [is] created, shared, remixed, repurposed, and passed along." People are communicating using "a vocabulary consisting not just of words but of images, video, multimedia and whatever they [can] get their hands on" (Downes, 2005). The shift has been towards collaboration, sharing and communicating, allowing people to be part of a connected world and users to become contributors rather than just absorbers of information.

Web-based communities are 'hosted' online through 'social software', a term although most commonly applied to recent software genres such as blogs and wikis, is perhaps best thought of not as a single type of software but more an approach to using the internet as a platform for forming online communities, interacting and co-constructing knowledge. Connections can be made on many levels. For example: email generally connects two people; blogs are generally one person 'talking' to an open, limitless audience; while wikis enable whole groups to interconnect and collaborate in a single location, often on a single document.

McLoughlin and Lee (2008) maintain that Web 2.0 has sparked intense interest in all sectors of the education sector, particularly as applications such as wikis, blogs and social networking sites (e.g. Facebook) have gained traction. They say that social software “allows customisation, personalisation and rich opportunities for networking and collaboration” (p. 1). Yet to take advantage of these opportunities there needs to be a move away from “last century’s highly centralised, industrial model of learning and toward empowerment through designs that focus on collaborative, networked interaction” (McLoughlin & Lee, 2008, p. 1). This reinforces the argument made by Timperley et al. (2007) against the knowledge transmission model that has been common to teacher professional learning in the past. McLoughlin and Lee use the term ‘Pedagogy 2.0’ to describe how to make integrated use Web 2.0 tools “that support knowledge sharing, peer-to-peer networking, and access to a global audience with socio-constructivist learning approaches” in learning programmes.

Wikis reportedly takes their name from the Hawaiian term ‘wikiwiki’ which means “hurry, hasten; quick, fast, swift” (Leuf & Cunningham, 2001), and is most likely a reference to the almost instant way they can be read and edited without complicated and costly third party intervention. First developed in 1995 as a communications tool and storage space for software engineers, they are now used in many other contexts, and perhaps their best known form is the online encyclopaedia, ‘Wikipedia’.

A wiki can be thought of as a combination of a website and a word processor document that Mindel & Verma (2006) say “supports asynchronous communications across distances” and can be used to establish “virtual learning spaces, or environments, that facilitate collaboration across time, interruptions, and distance” (p. 7). Being located online they can be accessible to anyone depending on the level of access control set by the site administrators. They are easily edited using a universal word-processor tool

within the browser which “relieves groups of collaborators from needing to agree on a single word processing or text processing tool and version” (Mindel & Verma, 2006, p. 5). Browser-based editors are “capable of such tasks as formatting, hyperlinking, embedding images, copying, and pasting” (p. 7).

Structurally wikis are built up of a collection of interlinked Web pages which can be easily expanded and reduced according to the needs of the users. Perhaps most importantly for this research, Mindel and Verma say wikis are able to support asynchronous communication between geographically disconnected participants and as such can be used to provide virtual learning environments that enable collaboration across time and distance.

Discussions on wikis can be ‘threaded’ conversations where the topic and responses are nested or grouped together under headings if use is made of the discussion tabs feature, or unthreaded if they are recorded on a standard wiki page. Threaded conversations do not allow for the ‘rhizomatic’ growth of learning that happens when the boundaries or constraints are removed. However if the unthreaded option is used it can be more difficult to keep the focus on a particular topic. Unthreaded conversations can appear to spin off in directions that seem unconnected requiring the facilitator to judge whether this needs to be addressed or be left to help build the sense of community that is so vital to effective learning communities (Wenger, 2001).

Wikis have become a tool of choice in education circles for many reasons. With regard to their use for professional learning communities, Mindel & Verma (2006) say wikis are excellent for “facilitating collaboration and knowledge creation among peers in a teaching and learning context that extends over time and distance” (p. 7). This collaborative constructivist model supports learner-centeredness and “learning emerges through shared understandings of more than one learner” (Mindel & Verma, 2006, p. 7).

Mindel and Verma also suggest that such collaborative environments facilitate teamwork which is considered an important element of effective learning communities.

Along with the research already discussed, Mindel and Verma (2006) highlight the implications of the collaborative model that aligns with wikis.

With wikis, the line between reader and contributor is intentionally blurred. Further, wiki use reflects the view of an instructor as one who facilitates information sharing among learners rather than simply transmitting knowledge from themselves to their students (Mindel & Verma, 2006, p. 1).

Mindel and Verma say that this means the 'instructor' needs to focus more on "facilitating information sharing among learners rather than on transmitting knowledge from themselves to students" (p. 7). They also found that unless strongly supported and facilitated, students generally tended to "accumulate or aggregate content on wiki pages rather than truly collaborate."

It was the intention of this research project to take that 'information sharing' to the next level and create an environment that would facilitate the generation of new knowledge and learning for the members of the learning community through blending the online and face to face environments. The wiki proved to be the most flexible, collaborative and learner driven social software tool available.

2.10 CHAPTER SUMMARY

Professional development within the education sector has traditionally made heavy use of one-off information sharing experiences despite these being

shown to be ineffective in generating long term change. This literature review has suggested that situating professional development in inquiry-based professional learning communities is proving to have a more significant and sustainable impact on learning.

Such learning communities can take different forms, but all have a similar set of characteristics that correlate with success (Timperley et al., 2007). However these characteristics are challenging the face to face model's ability to be truly successful for the learner. The use of online environments has had a significant impact on the accessibility of professional learning but these environments don't easily address the basic need for social engagement or the challenge of group interaction. Elements of social and cognitive engagement are essential for effective professional learning (Garrison & Vaughn, 2008), yet these sit comfortably in different physical and virtual environments. Building a sense of community happens more easily when participants are physically engaged, while reflective thinking which needs more time and individual space to bring out the deeper understanding is more easily achieved online (Garrison & Vaughn, 2008).

It is important to understand how to develop a social community if participants are going to be able to reflect and integrate their new knowledge capital and reach a resolution to their shared issue (Garrison & Vaughn, 2008). For ISTE to be able to do this well, they must be able to recognise the needs of the community, as well as their roles as teachers or facilitators, to ensure that the momentum is kept going.

In this research project ISTE were trying to identify how blended learning communities would support their work with teachers, while I was trying to establish the facilitation required when using blended learning communities to build ISTE professional learning. For ISTE practice to be effective, the literature discussed here is strongly suggesting that they need to use inquiry-

based approaches that develop teachers' ability to critically reflect on the effectiveness of their own practice (Timperley et al., 2007). Blended learning communities, coupled with informed and knowledgeable facilitation, can provide such opportunities and are emerging as the best way forward. To be successful, ISTE need to design the whole blended environment so that it provides for both social and cognitive engagement (Garrison & Vaughn, 2008), taking the best elements of both face to face and online environments to create a win-win situation for learners and leaders alike.

The following chapter will outline the emergent methodology selected for this research project and discuss the rationale for the choice of this qualitative approach.

CHAPTER 3. METHODOLOGY

- 3.1 Chapter overview
- 3.2 Methodological approach used in this thesis
- 3.3 Research methods used in this thesis
- 3.4 Ethical considerations
- 3.5 Chapter summary

3.1 CHAPTER OVERVIEW

This chapter will outline the research approach used in this project which aimed to identify how to best facilitate a blended learning community to support the professional learning of a small group of ISTE known as Isteam. This group wanted to know how to use blended learning communities to improve the support they provided the teachers they worked with. I will justify the emergent nature of this methodology through describing how the project was managed and why this was appropriate. I will outline the rationale behind the selection of the variety of methods and tools used to gather and analyse data and how they were used, and will also clarify the way validity and reliability were addressed. I will conclude by outlining how the research was managed ethically to ensure any perceived power relationships were overcome.

3.2 METHODOLOGICAL APPROACH USED IN THIS THESIS

Educational research generally tends to be either qualitative or quantitative. Qualitative research is concerned with meanings and the way people understand things or patterns of behaviour. Mutch (2005) says that qualitative research uses “methods that gather descriptive accounts of the unique lived experiences of the participants to enhance the understanding of particular phenomena” (p. 19). Quantitative research on the other hand uses methods that gather, code and group measurable (numerical) raw data “in order to generalise it to a broader population” (p. 19).

The research discussed here mainly made use of a qualitative research approach because I was concerned with making sense of what was happening within this blended learning community and understanding the trends as they emerged. Patterns that showed up from the data were in the form of descriptive accounts (written and oral records) of the actual experiences of the participants, which became the basis of the story that was being told. However there were times when quantitative data were also needed. Baseline and summative questionnaires included some quantitative questions to guide the direction the research took and to identify the impact of the work at the end of the project.

3.2.1 ACTION RESEARCH

Action research involves participants in thinking about and reflecting on their own practice with the aim of improvement. McCutcheon and Jung (1990) say that action research is “a systematic inquiry that is collective, collaborative, self-reflective, critical and undertaken by participants in the inquiry” (p. 148). Action research is participant driven, socially contextualised and the intent is to clarify and improve practice.

Typically, a cyclical diagram is used to show the evolving nature of action research, although variations show the spiralling eventuality of long term projects. The cycles involve stages of planning, acting, observing and reflecting (Kemmis & McTaggart, 1989; Zuber-Skerrit, 1995), but McNiff (1988) perhaps best captures the 'messy nature of action research in practice' (Bruce-Ferguson, 2003, p. 60) with her model showing lateral spirals developing from the initial investigation as it proceeds. Regardless of the graphical interpretations, it is generally accepted that these key stages remain largely the same. However action research cannot be referred to as a neat package that can be rolled out in one particular, consistent way using a specific 'kete' (basket) of methodologies. It is a 'strategy for social research, rather than a specific method' (Denscombe, 2004, p. 74).

There are several approaches to action research. Carr and Kemmis (1986) clarify these through using a continuum that begins with Lewin's (1946) *technical* or scientific action research. Lewin's (1946) model is more concerned with improving the effectiveness or efficiency of current educational practice than empowerment and sustained social change. At the other extreme is Habermas's (1987) *emancipatory* action research where both the researcher and the participants are working together towards the goal of emancipation. *Practical* action research (Schon, 1983) sits between these two on the continuum. Practical action research seeks to improve professional understanding (Denscombe, 2004). An outside researcher is a facilitator, there to develop collaborative relationships so the group co-constructs knowledge and self-reflects. Members of the group are encouraged to voice their views and develop strategic action plans. Critical reflection is encouraged by the researcher so that changes are initiated and consequences monitored.

3.2.2 JUSTIFICATION FOR THIS APPROACH

In this research project I chose the practical approach to action research as it enabled me to make sense through the understandings of the participants (Scott & Usher, 2004). Both quantitative and qualitative research methods can be flexibly interwoven to gather data as the goal is to develop better understanding or insight, rather than merely increasing the pool of knowledge. The use of multiple data gathering methods and sources allows for triangulation to overcome claims of lack of rigour and dubious validity due to the soft or 'fuzzy' (Swepson, 1995) nature of the data.

In the case of this research project, a predominantly practical approach aligned with the way inservice teacher educators commonly work with teachers and was a logical choice for the group as will now be explained.

Action research is often associated with "hands on, small scale research projects" (Denscombe, 2004), and is practical and issues based, so relates to real world concerns such as the one outlined here. Furthermore, through evaluation, the emergent findings are applied and integrated into the cycle of research, resulting in ongoing change.

A practical approach was selected for this research project because it sought to improve professional understandings in a collaborative way. I needed to be the 'social actor' that Scott and Usher (2004, p. 25) refer to, working to facilitate the group relationships so that participants could co-construct knowledge and self-reflect in a way that would enable them to become more efficient and effective in sustaining their practice.

This project needed to investigate and unravel the way Isteam could develop a blended learning community for their teachers through being such a community themselves. Isteam came from positions of relative inexperience in these environments so the project aimed to generate knowledge rather than prove it. As such, an interpretive, emergent methodology was most applicable.

Action research is an investigative process allowing the members of the group to gradually make sense of an issue through contrasting, comparing, reflecting and uncovering evidence and data. As a strategy for social research it employs a variety of methods to gather data, allowing cross referencing and triangulation to support and validate findings. Predominantly the data collection methods in this research project were qualitative although there was some quantitative data gathered intermittently throughout the process.

This work was based on the Carr and Kemmis (1986) four stage spiralling model but the reality of the messy nature of this type of research meant that some of the McNiff (1988) spirals emerged.

Isteam, the group of ISTE who were involved in this research project, formed to make sense of a practical issue that would impact on their work. They needed a 'social actor' to facilitate their learning to ensure they had the practical support necessary for their success. As this work was in a relatively new field, Isteam wanted to work collaboratively to develop new group knowledge, not learn what others had done, so the choice of an emergent research approach was the most appropriate. The methods used to collect data during this research project aligned with this choice of methodology which this next section will now outline.

3.3 RESEARCH METHODS USED IN THIS THESIS

In keeping with the action research methodology outlined above, this project predominantly used a qualitative approach to enable the rich level of data that needed to be gathered, although in true action research style, it emerged that some quantitative data was necessary once the group had decided the most appropriate ways to work.

The action research process involves recurring stages of planning, acting, observing and reflecting (Kemmis & McTaggart, 1989; Zuber-Skerrit, 1995). A baseline questionnaire was used to inform the planning phase and indicate the existing schema and prior knowledge of Isteam. During the acting, observing and reflecting phases, recordings of meetings and transcripts of the wiki discussion page provided data that were constantly revisited to inform next steps. At the conclusion of the research project, a summative questionnaire provided data to show shifts in Isteam thinking and practice.

Data gathered from these four distinct sources used collection and analysis methods that were selected because they were able to model data gathering approaches that Isteam could then make use of when trying to identify the evolution of their own learning communities. These methods will now be discussed in depth.

3.3.1 BASELINE QUESTIONNAIRE

In the early phases of this action research project, a baseline questionnaire (appendix 1) provided data about Isteam's existing preconceptions of the nature of effective professional development and identified the level of the support that would need to be provided. This data was necessary to establish Isteam's needs in the early phase of the research project. This baseline questionnaire was constructed to identify several things: Isteam's perceptions about professional learning communities and online learning communities; their preconceived thoughts around potential benefits and barriers to using online learning communities; their confidence and knowledge of Web 2.0 tools and environments; and ways they had used me to support their work in the past.

The questionnaire was developed using 'Survey Monkey' which is an online tool that can be used to create surveys and collect and analyse data. This tool was selected because it was easy to use and fitted with the context of

strengthening in service teacher educators' online practice. It was also a potential strategy the inservice teacher educators could use themselves in their research and they could encourage their teachers to use it with students so there was a double benefit to the research group.

The questions ranged from qualitative comments aiming to gather the rich data typical of such approaches, through to quantitative Likert-type or rating scales. As Denscombe (2004) says, questionnaires fundamentally vary in two ways - Likert-type scale questions have pre-determined answers generated beforehand whereas open-ended questions do not, and secondly, the answers to the different question types are analysed quite differently. Likert-type scales generate quantitative data that are compared in a standardised way. These scales are used to collect ordinal data which can be counted, categorised and ranked so that comparisons can be made between categories (Denscombe, 2004). However answers to open-ended questions can be treated either qualitatively or quantitatively depending of the method chosen for coding the outcomes.

While Likert-type scales in questionnaires restrict response options, Denscombe describes open questions as ones that "leave the respondent to decide on the wording of the answer, the length of the answer and the kind of matters raised in the answer" (2004, p. 155). The advantages of open questions are that the answers provide the rich data needed by qualitative researchers allowing fullness and complexity as there is space available to express yourself. In this questionnaire, the open-ended questions were mainly treated qualitatively, although the themes that emerged were identified through the relative number of times the comments came through.

A necessary step in the development of all research tools is field-testing. A pilot group needs to be representative of the teachers for whom the questionnaire will eventually be used. This survey was field-tested by two

advisers not involved in the research but who were working with online learning communities. Problems such as question similarities making them appear to repeat themselves were then overcome, and the time required to complete the questions was identified before the final questionnaire was given to participants.

Although most of the qualitative data from this questionnaire were analysed through thematic analysis (Mutch, 2005), some quantitative questions were used to provide easily classified and manipulated data that could be appropriately displayed to promote the findings to my audience.

3.3.2 FACE TO FACE MEETING ENVIRONMENT

Isteam met face to face twelve times during the year for meetings of approximately two hours. The meetings were a chance to develop new technical skills and build our knowledge of using blended learning communities to support professional learning. They were also a vehicle to share and discuss what had happened in our online learning communities since we had last met face to face, and to reflect on the implications so we could map out Isteam's next steps.

Apart from two instances, all Isteam attended each meeting which were held in their office. The meetings were digitally recorded and loosely transcribed using a field note tool (Mutch, 2005). Once the transcripts were completed, they were analysed at two levels. Firstly a thematic analysis was done to identify overall themes and patterns in the discussions. Once these themes were identified, a closer content analysis allowed me to classify the comments using those themes. Meetings held in April, June and August were analysed to triangulate with themes emerging from other data.

I will now show how the thematic and content analysis methods were used to analyse the face to face data and explain the reasons for choosing these methods.

• THEMATIC ANALYSIS OF FACE TO FACE MEETINGS

Thematic analysis is a qualitative approach to analysing documents and as such it takes its categories from the data. It is the themes that emerge that are important and there is no intent to prove a theory through the process. The qualitative researcher has a much more open mind when approaching content. The goal in thematic analysis is to try to have the data “speak for itself” (Mutch, 2005, p. 130). Coding in qualitative research involves looking for patterns and themes. In this research project, coding was done by hand.

In general, Mutch (2005, p. 131) says the process for thematic analysis involves several stages: browsing, highlighting, coding, grouping, theme development, checking for consistency and selecting examples that can be used for reporting.

A process of thematic analysis in analysing data in this research project meant I could find consistent messages within the data as these themes emerged. This *qualitative* process involved initially browsing and highlighting items of interest from the face to face meeting comments and then colour coding early categories as they became evident and revising these as the themes became more defined. As the meeting transcripts built up, these categories became clearer and overarching themes emerged. These themes were used to support the more *quantitative* content analysis phase.

• CONTENT ANALYSIS OF FACE TO FACE MEETINGS

Denscombe (2004, p. 187) says you can also analyse transcripts of audio recordings quantitatively through content analysis. In content analysis, transcripts can be approached by counting or measuring such things as

relevant words or ideas, frequency and order of occurrence, the values conveyed in the 'text', and the proximity or association of ideas. Content analysis requires predetermined categories which allow the researcher to collect data in numerical formats that can be statistically described. Findings are presented in the appropriate forms, tables, graphs, and are related back to an initial hypothesis.

Content analysis of the meeting transcripts was used to provide quantitative data to show the amount of time spent on particular themes during these meetings. These themes had already emerged from the qualitative (thematic) analysis and provided categories to help me analyse the data.

Hard copies of the transcripts of the meetings were given to Isteam and then placed on the wiki for them to access later if they chose, providing high levels of transparency. By using the wiki in this way I reinforced the centrality of the wiki to our project and encouraged the research group to also use the wiki to store their own material. Isteam in turn used the same strategy with their teachers as they analysed results from their questionnaire.

3.3.3 ONLINE WIKI ENVIRONMENT

Isteam contributed to this wiki in many ways and several pages were created during the research project to cater for needs as they arose. As each page had a different function, they allowed for different facilitation strategies to be tested and modified. For example:

- Discussion page - we kept up our contact and recognised our learning and challenges
- Journals – each Isteam used their own personal reflective journal page to record their progress

- Strategies page – as our findings emerged they were recorded and were developed into a useful tool. For Isteam, this became their key research outcome
- Analysis page – each Isteam analysed the progress of their own teacher wikis and used this page to record their findings
- Help page – as Isteam found new ways of doing things online they shared these with the group
- Party page – when the importance of providing a social climate was recognised, this page provided some scaffolding and Isteam used it as a place to practise

For the purposes of this research, the discussion page was used as the source of data for the analysis of the online aspect of this blended learning community. Isteam trialled and monitored different strategies and recorded their progress through this discussion page and I used this page to model practice and challenge Isteam thinking. Themes that had emerged from the face to face meetings were also used to analyse the content of the wiki discussion page. The reasons for this and the methodology used will now be explained.

• CONTENT ANALYSIS OF WIKI DISCUSSION PAGE

As Denscombe (2004, p. 212) says, “documents can be treated as a source of *data in their own right*” and are a common source of data for social science researchers. Analysis of documents provides easily accessed information or data that can be used to answer a question.

The ‘document’ in this research project was the discussion page on the wiki that was created for the online environment within our blended learning community. Isteam were expected to use this wiki to share practice and

maintain communication, practise strategies as they were identified, learn how to use new Web 2.0 programmes and generally build up their technical knowledge and confidence.

Diaries are one form of documentary data that can become important retrospective records of the writer's version of events. Denscombe identifies three crucial elements of a diary that records in this retrospective way. It will contain: factual data - a log of events, decisions and people involved; significant incidents as seen by the writer; and personal interpretations including reflections and emotions relating to events described.

The Isteam wiki 'discussion page' had all these key elements and was used as a communal research diary by all participants during this research project. This was the place where the social and pedagogical knowledge and confidence of the participants was built and this page was the key to identifying emerging concepts.

Through content analysis (see section 3.3.2) of this document I was able to classify wiki discussion using the themes from the face to face meetings. Initially I analysed each entry, but as most entries had multiple themes present, I decided to analyse each line of entry on the wiki discussion page instead. This also provided more valid data as some entries were 'one liners' while others could involve whole pages. This content analysis provided the quantitative data that was used to show the relative proportions of each of these themes and how they changed over the duration of the research project.

The final source of data was the summative questionnaire which will now be discussed.

3.3.4 SUMMATIVE QUESTIONNAIRE

This research project set out to identify facilitation strategies for using blended learning communities to support professional learning. At the end of the research project, a summative questionnaire (appendix three) was completed by Isteam to indicate the impact of the project on their confidence and their views about the potential of the practice of using blended learning communities. The original baseline questionnaire was adapted and used as a summative tool by using different question stems such as “based on this year’s work...”, so predictive questions now became reflective, enabling shifts in thinking, confidence and knowledge as a result of working as a blended learning community to be indicated. A similar structure using both qualitative and quantitative questions was also used.

The summative questionnaire was used to identify any shifts in thinking about professional learning communities, particularly blended ones as this type of community became obvious during the research project. It was also to see how Isteam felt that blended learning communities had impacted on their core professional development work with teachers.

There was one section of this questionnaire that did not align with the baseline one as the purpose was different. This section asked Isteam what they felt the impact their own blended learning community had had on their professional learning. This new section was included because my research question had been about my facilitation of ISTE professional learning within a blended learning community, so I needed to know about the importance or impact of the support Isteam had received from me. To relate this to the professional learning of ISTE, I included a question about what Isteam felt they had gained most from their involvement in the project. The first section used a Likert scale and provided quantitative data, the new section asked for comments which were analysed qualitatively.

The four sources of data discussed in this section were separately analysed to guide the project and identify common themes which were fed back into the research. The results of the analysis of the data will be discussed in the findings chapter.

The next section will explain how the project was ethically managed and how data collection and analysis was handled to ensure validity and reliability.

3.4 ETHICAL CONSIDERATIONS

Ethics in research are 'the moral principles, guiding conduct, which are held by a group or even a profession' (Mutch, 2005, p. 76). To ensure ethical standards were maintained, this research project was done inside an overarching INSTEP research project involving Massey University inservice teacher educators and as such already had a full ethics approval status. The full Massey University Ethics proposal was submitted and approved in February 2008. This allowed me to gather data through the informed consent formats that had been approved prior to the research.

The major ethical principles developed for Massey University staff guided this research project. These principles are:

- Respect for persons
- Minimisation of harm to participants, researchers, institutions and groups
- Informed and voluntary consent
- Respect for privacy and confidentiality
- The avoidance of unnecessary deception
- Avoidance of conflict of interest
- Social and cultural sensitivity to age, gender, culture, religion, social class

- Justice

A qualitative researcher has the responsibility to respect the rights, practices, beliefs and principles of the participants. Any data gathering procedure must be clearly carried out without any possible feelings of power or coercion, and issues related to trust, validity and fear of failure must be prevented from occurring. To this end, all participants were given an informed consent letter (Appendix four) which addressed these issues. All participants volunteered for the project, indeed actually came to me asking to be included in it. All participants contributed to a wiki using Wikispaces as the provider. This space was 'protected' but not private, meaning anyone who found the site could read about the work but only members could write on the wiki itself. Membership of this wiki was restricted to the research group and my supervisors. This was done because Isteam wished to share their learning journey with others especially as they practised being learners with the digital tools. However their journal pages were set up as links to private sites and were password protected; only Isteam were able to read each other's journals.

Of particular relevance in this project was a potential issue of power relationships. Prior to the research project being identified, all participants had indicated that they wanted to build online professional learning communities to improve their effectiveness with providing teacher professional development, so we all shared the same problem. All participants had also volunteered to be in a professional learning group to work on INSTEP research as was encouraged by their university employers. In this case, it was the shared problem that initiated membership of the research group and then drove this INSTEP professional learning group.

As individuals, Isteam initially wished to investigate the question of engaging teachers in online learning environments, but it was a question around the

best ways to build a blended learning community to support professional learning for ISTE that allowed the combined outcomes to be pulled together. As all Isteam were keen to investigate the question in a practical action research (Schon, 1983) manner and all had the same status within the organisation, no-one was coerced into being part of the group and no power relationship issues could affect the research.

Mutual respect between the researcher and the participants is required in this form of action research, so it must be a collaborative, social process. Assisting this, I was not the leader of the group, there was another Isteam who had part of her work load allocated to the role of INSTEP co-ordinator. This leader managed the research timeline and paperwork for our group and kept in touch with the project co-ordinators. I also made a conscious effort to raise the status of all participants during the year so they all recognised they were contributing in different ways to the group's learning and it was the overall synergy of the different aspects of these contributions that enabled the group to function successfully.

3.4.1 DATA MANAGEMENT

Data analysis can be likened to doing a jigsaw. Initially the pieces are all mixed up together before being tipped out of the box and grouped where images show they belong together. Gradually these groups will combine to provide the complete image. Similarly, breaking down field data into meaningful pieces and then reassembling it into larger chunks gave me access to the developing bigger picture. Miles and Huberman (1994) maintain that data analysis has three distinct steps: data reduction, data display and conclusion drawing and verification. Mutch (2005) suggests three similar stages: data analysis, data display and data interpretation.

Four distinct sources of data were used in this research project: two questionnaires - baseline and summative; and content analysis of transcripts

of face to face meetings and the discussion page on the research project's wiki. I will now outline how the data from these sources was managed.

• QUESTIONNAIRES

Both the baseline (see appendix two) and summative (see appendix three) questionnaires were created using 'Survey Monkey' and analysed using the built in functionality of that programme. The statistical data from both of the questionnaires were grouped by the data tool. Survey Monkey is able to process the closed question data and generate statistical representations indicating the number of responses in percentage format. Survey Monkey lists open, qualitative question responses as independent comments. These responses are simply listed for further analysis by the researcher.

The baseline questionnaire informed the action research methodology as the quantitative data gave a clear indication of technical strengths and weaknesses of the group and the qualitative data identified Isteam's existing schema about professional learning communities. The qualitative data was coded and categorised after the responses were collected. Data from the summative questionnaire were used to show Isteam shifts as a result of the research project.

Hard copies of the results were given to Isteam and discussed at meetings to enable the whole group's input into the outcomes. This was also done to scaffold them through the process as they needed to analyse their own questionnaire results. Isteam completed the survey online to help maintain anonymity and to allow them to see how the Survey Monkey tool worked. Analysed results were shared and discussed with the whole group in a follow up meeting.

• CONTENT ANALYSIS

The transcripts of the meeting tapes were placed on the wiki as minutes for each meeting. Each of these transcripts were analysed to identify emerging themes which were then woven into the next level of support offered to the participants. While Isteam were given the transcripts of the face to face meetings, they were not given copies of the thematic analysis, although findings were fed into discussions and used to guide the direct support of individual members where appropriate. To keep the research manageable, only three of these face to face meetings were subjected to the more quantitative content analysis process and this was done when the research project was completed.

Material taken from the wiki discussion page was used as evidence for the face to face meetings and was freely available and contributed to by Isteam at all times during the research project. The more quantitative content analysis of the wiki discussion page was also done when the research project was completed.

3.4.2 MEASURES TAKEN TO ENHANCE VALIDITY AND RELIABILITY

Validity is considered one of the strengths of qualitative research and as this research employed mainly qualitative methods, the emphasis was on validity rather than reliability which can generally only be shown through large numbers of sources or participants. This meant that precise descriptions of what people said were able to be understood *within* their contextual location. As social research is all about providing “appropriate and useful insights into social situations” (Davidson & Tolich, 1999, p. 35), embedding any inquiry in its socio-cultural situation is a given requirement.

It is important that the reader of qualitative research is sure they can trust the processes if they are to believe the findings (Mutch, 2005, p. 115). Mutch states that clear documentation of the research decisions, design, and

analysis techniques are central to this trustworthiness but she also says that a 'demonstrated ethical approach' (p. 114) is necessary if the reader is to accept the study as trustworthy and credible. In this research, all participants were able to access the raw and analysed results of the questionnaires, they contributed to the meetings and were able to read the minutes, and they contributed to the wiki discussion page, so this data was freely available to all. The project fell within the INSTEP overarching research project so all approaches aligned with this ethics approval.

Mutch's (2005) thematic analysis process was followed to identify key messages from the meeting transcripts. These themes were used to triangulate with data from the wiki discussion page, findings from the questionnaires and to check for consistency and resonance with other research.

3.5 CHAPTER SUMMARY

This chapter has described the methodological approaches used in this project and justified the selection of a qualitative approach. The discussion of these has shown how they were developed ethically and targeted for the specific purpose. This discussion also shows that data were gathered, analysed and interpreted using emerging themes as the underpinning action research methodology. The validity of the data has been secured through the use of a variety of sources and data gathering tools to ensure outcomes were able to be shown across a range of platforms. The following section will now describe the findings from the analysis of the various data gathered from the sources described in this chapter.

CHAPTER 4. FINDINGS

- 4.1 Chapter overview
- 4.2 Baseline questionnaire
- 4.3 Face to face meetings
- 4.4 Online discussion page
- 4.5 Summative questionnaire
- 4.6 Chapter summary

4.1 CHAPTER OVERVIEW

The data discussed in this chapter are the findings of my investigation into how to facilitate blended learning communities as a way of supporting the professional learning of ISTE. I used a recursive emergent action research methodology so data discussed here came from the exploration of the problem and drove its direction. In keeping with this approach, data that were gathered progressively throughout the research project will be discussed in the order that correlates to the research project timeline. Firstly I will present the initial data from the *baseline questionnaire*, followed by the data from both recordings of selected face to *face meetings* that were held during this project and *online wiki discussion page*. This chapter concludes with the data from the *summative questionnaire*. As each source is analysed I will make use of some of the core messages highlighted in the literature

review in Chapter Two to identify the emerging themes. I will round off this chapter by bringing together the findings from the triangulated data to provide a basis for the concluding discussion in the following chapter.

Isteam quotes used in this findings chapter will be generically referenced to 'Isteam' unless more than one Isteam is represented in the conversation, as this research project looked at the work of this particular group of ISTE not the individuals within the group. This will also help to maintain participant anonymity.

4.2 BASELINE QUESTIONNAIRE

This section will outline and discuss the results of the baseline questionnaire (see appendix two) which was completed at the beginning of the project in March. This questionnaire provided data around the pre-existing skills and views of Isteam as they entered into the research project. Data from each section will be presented separately before an overarching view is suggested.

- SECTION ONE: PROFESSIONAL LEARNING COMMUNITIES

The responses to an initial section around professional learning communities and whether these would enhance teacher learning showed that Isteam clearly knew what these were and recognised their value. Their comments aligned with current research findings and they showed a keenness to learn how to make use of online environments to develop such communities to improve both their teachers' and their own practice.

When Isteam were asked what they did to engage teachers in professional development, they generally offered strategies for *managing* the process

such as “choose times and places with participants.” Some comments, such as “ask open questions that involve teachers being reflective,” showed good understanding of co-constructive pedagogy but still didn’t suggest strategies for actually *engaging* teachers in their learning. Isteam said teachers had to come to the meetings as “they are a compulsory part of the professional development”, or “I probably do very little as there is an expectation they will participate” and hadn’t considered teacher engagement in their practice.

• SECTION TWO: ONLINE LEARNING COMMUNITIES

Isteam suggested there were similarities between online and face to face environments saying they were “the same as the PLC only it happens online not face to face.” However there was a definite gap in their understanding of how professional learning communities functioned within online environments. No-one suggested that the face to face and online environments may require different facilitation or that learning might occur differently in each one. Online learning communities were seen as potentially beneficial to the way advisers work with suggestions including efficiency, time saving, travel, cost effectiveness, and doing things once rather than having to wait for meetings. Isteam also acknowledged that by being online participants had access to a wider audience, commenting that using online environments meant “a range of participants from wider area than just in school can communicate, read, discuss, learn and share their practice using the internet tools available.”

• SECTION THREE: TECHNICAL SUPPORT

A section of questions asking Isteam about their technical confidence showed that although their computer knowledge and skills were good, their knowledge and confidence in the use of Web 2.0 tools was not broad. When questioned about wikis, the key online tool intended for this project, there was a clear lack of confidence by all Isteam. On a six point scale (level 1

was no confidence) the rating average was 2.75 with a range between 1 and 4. When Isteam were asked whether they could do key tasks such as retrieving lost material or posting documents; on a 4 point scale, 5 of the 6 identified tasks had low rating averages of between 1 and 2. At least half of Isteam responded at level 1 in all categories.

• SECTION FOUR: ISTE SUPPORT

Isteam were asked how they had used me to support them in the past and how they expected me to support them through this project. This section identified that apart from being used for technical support (I had the e-learning adviser role) there had been no collaborative work history with this group. This lack of a collaborative working approach was attributable to the way ISTE were expected to work within Massey where the focus was on the specific outcomes that each ISTE was contracted for and there was no time or requirement that this would involve collegial support from each other. Yet when Isteam were asked what they expected from me this year through this project, they indicated they were open to changing this structure. Responses asked for practical support: ideas, planning, using new programmes, etc; however it was interesting that they couched these pedagogically. Isteam made requests such as “warm demanding for me to give things a go,” “supporting me in my work with teachers,” “questioning us about our practice,” “motivating people to participate,” “the how to – why/why not – what next – when;” which told me the *way* they wanted help as well as *what* they wanted me to give them.

4.2.1 BASELINE QUESTIONNAIRE SUMMARY

Overall, this questionnaire highlighted that Isteam were confident about the definition and role of professional learning communities but lacked depth of knowledge of what these looked like in an online environment. They had limited technical confidence and skill, but were keen to embrace the changes

that would be required. The need for strategies to engage participants in an online environment first showed up through this questionnaire, as did the recognition that the pedagogical requirements of managing an online professional learning community would differ from their own current practice.

Although their enthusiasm was strongly evident, given the current levels of technical skill and confidence shown here I decided to focus on just using wikis for the online environment instead of a range of Web 2.0 tools. To raise their levels of online competence, strategies for building their technical confidence and capabilities were implemented in the early phases.

Isteam saw that this research project could be an opportunity to co-construct knowledge in ways that were new to them in their work. In the following face to face meetings section, I will show how these findings influenced the direction of the research project and the decisions that were made by Isteam.

4.3 FACE TO FACE MEETINGS

This section will discuss the findings of the regular face to face meetings that were held during the research project. In keeping with action research methodology (see section 3.2), these meetings were recorded, transcribed and thematically analysed so that I could make sense of what was happening and identify emergent themes. From this thematic analysis, three strong themes emerged; building knowledge, building social relationships and building pedagogical capacity. These themes will be used to structure the discussion of the face to face meeting findings.

The transcripts became the 'document' (Denscombe, 2004) or source of data for the face to face meetings. While all meetings were thematically analysed, to keep the data analysis process manageable, only the

transcripts of three meetings were subjected to the more quantitative 'content analysis' process. These face to face meetings from April, June and August, were used to give an example of the way discussion changed throughout the project.

These themes are defined below.

1. **Building knowledge:**

- *Technical* – Talk about technical (computer-related) knowledge: up-skilling in use of programmes, managing the online environments, etc
- *Content* – Talk that developed content knowledge about building professional learning communities
- *Research* – Talk that developed research capability

2. **Building social relationships** – Social discussion about getting teachers to engage through building relationships, trust and technical confidence in the online environment

3. **Building pedagogical capability** – Discussion about what we did or could do that would lead to teachers talking about their practice and ultimately move them towards metacognitive thinking where they were critically reflecting about their learning online.

These themes have similarities with the findings of research by Wenger (2002), Lai et al. (2006), and Garrison and Vaughn (2008), who recognised the importance of building a sense of community or social presence, alongside cognitive capacity or domain knowledge. However in this research project a clear separation between talk that showed *learning about* technical, professional learning community content and research knowledge, and talk that showed them *building new* pedagogical understanding of practice through critical reflection and challenge emerged.

In this section I will briefly overview the way the three themes related to each other in terms of time spent talking within each theme. Each face to face meeting will be discussed through the three themes and using Isteam 'voice' to explain the findings in more depth. The graph below shows the relationship between the amounts of time spent in each of these categories.

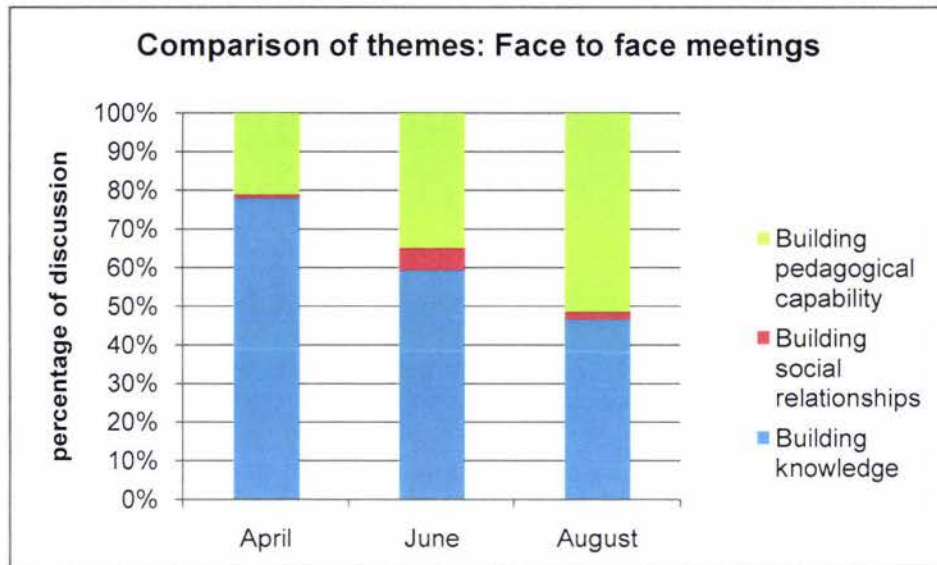


Figure 5 Comparison of themes evident in face to face conversation

It is clear that the face to face meetings were heavily focussed on building technical, content and research knowledge although this theme was obviously decreasing over the research period. Pedagogical discussion was evident from the very beginning and steadily increased in proportion to the other categories. Discussion about building social relationships and trust rarely surfaced in face to face meetings apart from a small focus in the midpoint meeting which will be discussed in this section.

4.3.1 APRIL FACE TO FACE MEETING

This early meeting was specifically to frame up the Isteam teacher questionnaire so they could identify their teachers' needs and expectations of online learning communities. 61% of the time was spent on this aspect. 17% of the time was spent on increasing Isteam's technical capability, less than 1% of the time was spent on social discussion, and 21% of the time was spent on pedagogical discussion around the best ways to engage teachers in the project (see figure 5).

- **THEME ONE: BUILDING KNOWLEDGE**

Knowledge and understanding of 'being a researcher' was developed through generating the Isteam questionnaire that they required in order to identify the learning needs of their teachers. Isteam needed to understand what they needed to know, what questions to ask, how these were structured to give useful and unbiased responses, and how to analyse the responses to provide useful information. This knowledge was built up alongside some new technical knowledge through the use of the online survey tool 'Survey Monkey' (www.surveymonkey.com) to construct the questionnaire. As well as learning how to use Survey Monkey, they learned to manage other wiki techniques to build up their e-learning kete such as hyperlinking, using wijits, embedding surveys and putting other material onto the wiki pages.

- **THEME TWO: BUILDING SOCIAL RELATIONSHIPS**

Isteam were not yet conscious of the need for social connections so apart from one "we could run a treasure hunt" comment referring to how we could introduce teachers to the wikis, there were no direct references to ways of building confidence and relationships in the online environment. However this comment does show that Isteam recognised the importance of using fun to achieve the goal of teacher engagement.

- **THEME THREE: BUILDING PEDAGOGICAL CAPABILITY**

(N.B. The term pedagogical development at this point refers to the questionnaire, not the wiki as these were not yet really active.)

During the process of generating the questionnaire, Isteam talked about ensuring the questions were user-friendly so teachers would feel comfortable completing the questionnaire. Isteam also clarified how the questions needed to be worded so they would get information that would help them to provide the support they wanted. Isteam realised that teachers would need to have considerable scaffolding to be able to complete the survey online at this point. As Isteam were identifying teacher attitudes to online learning communities, not their technical abilities, it was realised that hard copies would be more appropriate rather than expect teachers to complete the questionnaire online. This decision showed an early recognition of the importance of selecting strategies according to the learning needs of the participants rather than the convenience of Isteam.

4.3.2 JUNE FACE TO FACE MEETING

The June meeting was held after Isteam had analysed the content of their wikis and compared May and June data. Two themes emerged strongly in this meeting: building knowledge and building pedagogical capability. Within the first theme, 20% of the time was spent building understanding of online learning communities, 35% developing awareness and application of the wide range of statistical data available within Wikispaces and 6% of the time was about widening technical knowledge. In the second theme, 35% of the time was spent on reflective discussions to unpack what was now happening on the wikis and generating ideas to engage teachers. The third theme, building social relationships, played a very minor part at this point with only 4% of the time spent in this area (see figure 5).

- **THEME ONE: BUILDING KNOWLEDGE**

The literature review done by Lai et al (2006) was central to this meeting as the pages about the design principles of online learning communities (pp32-47) were unpacked to help Isteam understand more about learning communities and consider what was happening in their own.

By using our research wiki as an example, Isteam were able to see the range of quantitative statistical information available on Wikispaces and how this could be used. Isteam were shown how to connect the peaks and troughs in the graphs relating to visitor numbers with specific wiki activity on the research site.

Throughout this meeting there were small instances of technical talk. I used the opportunity to introduce new tools such as Google searches and new programmes such as Googledocs (<http://www.google.com/google-d-s/b1.html>) and Skrbl (<http://www.skrbl.com/>), however with less than 6% of the time given to this type of talk, it was not a strong focus of this meeting.

- **THEME TWO: BUILDING SOCIAL RELATIONSHIPS**

Just prior to this meeting I had placed a picture of my new pup on the Isteam wiki asking for ideas for names, causing a flurry of activity. I used the Wikispaces statistics data to graphically show this rise in activity and challenge Isteam into thinking about what had happened. One participant made a connection with one of Wenger's (2002) seven principles for the cultivation of professional learning communities – the need to combine familiarity and excitement. I helped Isteam to link this principle back to their own practice by thinking about what they had just experienced. "Keep coming back to the pup experience – familiar and exciting. It will go through peaks and troughs but what is it that will kick them out of the trough?"

During this meeting the group were challenged continually to think about their roles in building relationships rather than just think of the way teachers were responding or not, I was trying to help them to reflect on their *own* practice. For example:

Isteam 1: I'm feeling negative because I know where I want to go but nothing's happening

Researcher: Ok so if you've given them the information and nothing happens, what are you going to do? Why would they want to go in there, what is it that makes them want to go in there?

Isteam 1: I've put up questions and readings...

Researcher: Yes but do they really want to respond to that? Have we taken it too seriously? We've gone into it with this wonderful big idea of it being a learning community ...and they are going to be really engaged...

Isteam 2: And we've forgotten the relationship stuff!

I then suggested "if we analyse our wikis we could ask ourselves, is this a social website, have we built social networks? What have I done to make them understand and know about each other?" and this meant that we started to recognise some of the things that we had been doing in this area. For example one member of the group had arranged a 'fish and chip Friday meeting' through her teacher wiki and encouraged people to offer to help by using the wiki to plan it. Teachers had engaged with this immediately. She also commented that "I think it's the way you write too, I try to write as I speak so it's not an academic thing, it's social."

Later in the meeting the idea of a virtual party was raised and this sparked considerable interest.

Isteam 1: Shall we have a party? There's an idea, a virtual party. I could give each centre a job, put something up that shows you've contributed...

Isteam 2: they could bring food, music, party hats...

Isteam recognised that this type of fun activity would have the tangential effect (Portnow, 2008) of broadening teachers' technical skills. Although some of the group were unsure of the idea, one was keen to try it out and talk about it at the next meeting.

• THEME THREE: BUILDING PEDAGOGICAL CAPABILITY

When Isteam compared data from May and June, they initially talked about what they thought the teachers were or were not doing but their comments were coming from their opinions rather than from evidence. For example, one Isteam said "C (teacher) put his stuff on about inquiry learning but the others...probably look at it and think 'I don't know where to start – it's out of my league'." Another Isteam said "most are still thinking this is too hard." I used graphical data from the Isteam wiki and encouraged Isteam to align peaks in visitor numbers with tasks they had been given through the project and "find out what was it that worked, what was the strategy." I told them to "put the magnifying glass on these ... there's a huge gap in here in the number of views – why, what's not happening?" This challenged them to think about the impact of their practice on their teachers' engagement.

Isteam were scaffolded by thinking about the approaches I was using:

Researcher: When I put something up, what am I asking? Or am I just telling... I've had to seriously look at what I am doing and change the way I put things up. I'm using the wiki as a way to think through strategies. I was not empowering you, I was simply telling you...

The suggestion was again made to create a list of strategies that would help Isteam deal with the barriers. Strategies were shared for getting teachers to contribute to the learning community, ranging from low level "email people and tell them the workshop dates are on the wiki" to more reflective "respond in an inquiry way – 'C (teacher) has made an interesting point here and I'd like to find out what the rest of you think'."

One Isteam said she was “disappointed and frustrated, competing with my expectations” as she had been getting very little input from her learning community.

Researcher: At the very beginning of our wiki it had to be me that was driving it. You need to drive it, ask a question. ‘I saw some really cool stuff in your classroom last week L, can you tell us about it?’ or ‘L asked a really good question last week, has anyone got any suggestions?’

At this point in the cycle I was still tending to drive the reflection process through challenging questions (Lai et al., 2006) and providing some of the solutions but in general, Isteam were beginning to show that they knew they were pivotal to making their online learning communities work. In some cases their disappointment at the lack of immediate success was still clouding their ability to recognise the positive outcomes.

4.3.3 AUGUST FACE TO FACE MEETING

This meeting was the final research-focused meeting for the project, although subsequent meetings were held to prepare the presentation of the INSTEP project findings to a wider audience. 46% of the time was spent on building knowledge; 32% of this was building research capability and 14% on technical capabilities. 2% was spent building social relationships, particularly about getting teachers to engage in the learning communities. 51% of the time was spent on building pedagogical capability mainly Isteam reflecting on how they had been getting teachers to talk about their learning online (see Figure 5).

The theme of building pedagogical capability was significant in this meeting as Isteam were now becoming critically reflective themselves, confidently justifying why things had happened and suggesting possible next steps to improve their own practice. They were now challenging their own thinking from a position of knowledge and confidence.

- **THEME ONE: BUILDING KNOWLEDGE**

Building and sharing our growing understanding of the research process was the focus of this meeting as we were about to present our work to colleagues and needed to recognise our journey. One Isteam said, “learning is not linear, it happens in multiple pathways” and this sparked a discussion about Cormier’s (2008) rhizome theory and McNiff’s (1988) spirals as we talked about how our project had developed off-shoots. The linear research guidelines the INSTEP project had provided had not been understood when they were unfamiliar with being researchers, but comments such as “I get it now that I’ve done it” and “we started down here then went back up to this bit” show that now they were recognising the iterative nature of action research and were now not taking the model quite so literally.

Several links to other research were made as Isteam unpacked how the group had worked this year. They were making connections with the material they were reading in other parts of their work now as well as the Lai et al (2006) literature review that we had been referring to throughout the project.

At the end of this meeting I asked Isteam to unpack the significance of data analysis in this project for them. All Isteam commented that there had been an initial fear and lack of understanding but the use of graphs and thematic analysis was now recognised as a significant factor in their success. For example:

Isteam: Suggesting we use the wiki data – those graphs are good – and running off the (wiki) pages and highlighting the themes...I had qualitative and quantitative data straight away, so easy!”

The technical discussion in this meeting evolved from the discussion, it was no longer a necessary learning requirement for effective practice to occur. There was some talk about using screenshots which came about because one participant had been shown these recently and offered to share her

learning. Other technical talk was about such things as resizing photos and using programmes such as Flickr (<http://www.flickr.com/>) and Google Images (<http://images.google.com/>) to find web friendly photos but again these discussions were not planned, they arose from the needs identified in the conversations. While these added to the professionalism, Isteam were generally independent of my technical support at this point in the research.

• THEME TWO: BUILDING SOCIAL RELATIONSHIPS

Isteam shared strategies they had been trying in an effort to get teachers to join their wikis. These ranged from the simple use of bribery (chocolate fish) and persistence (repeatedly inviting them), to making use of the face to face forum within blended learning communities to ensure they had an opportunity to take their first steps in a supportive environment. Isteam were growing the strategies page on the wiki by this time and beginning to make use of the shared ideas from there.

• THEME THREE: BUILDING PEDAGOGICAL CAPABILITY

A key focus of this meeting was debriefing what had been happening on Isteam teacher wikis. Each adviser talked about their teacher activity and identified the strategies they were using and their effectiveness. One strategy that I was encouraging at the time was using photographs of classroom displays to capture teacher practice as a basis for online discussion. However when I asked Isteam what sort of reactions they were getting to this strategy, one made the following comment:

Isteam 1: It was great. The teachers went 'oh that's a good idea' so I said 'you do it and put up a comment'.

Clearly this Isteam was still expecting the teachers to lead the way without taking responsibility for scaffolding them through the process herself. However this comment encouraged others to share how they had used the

strategy and supported teachers to contribute through one on one support and using bribes. This sharing served to make Isteam reflect on their approaches:

Isteam 2: I've been expecting them to do it but it's not that easy, so I might go around and take photos while I'm there and get them to tell me something about the photos.

Isteam 2 now recognised her responsibility to facilitate teacher shifts. She already took photos while with her teachers but had been emailing these with questions about what was happening. I challenged her to use the wiki for this type of support instead and then encourage other teachers from different centres to participate in the conversations. I then asked everyone about what sort of questioning strategies would encourage teachers to talk about their photos. After some discussion and sharing of ideas, she realised her next step;

Isteam 2: So my job now is to put the photos up with feeder questions to get them going – what surprised you, I wonder, etc.

Isteam all talked about the different roles participants took and how these changed as they became more confident. Most recognised their 'technicians' and their 'leaders' (Lai et al., 2006) and they talked about how they were using these key people to build their online learning communities. The practice of one teacher who had recently started to put his work online and ask questions of others was mentioned.

Isteam: C (teacher) has done the most...encouraged others to 'talk' to him.

Researcher: So we've moved C from being an observer to a leader.

Isteam recognised that participants could be moved through different roles over time with the right facilitation. Lurkers were of less concern now apart from some young teachers who Isteam felt were "feeling the hierarchy and unwilling to take the risk."

As mentioned in the knowledge section of this face to face meeting, Isteam were asked to reflect on what using data had done for their learning. They were able to say how data analysis had “scared me initially” but because they were able to link their findings to the literature, they could track their progress and were forced to think about what was happening and why. “You could identify yes I’ve done that phase and there was a ‘where to next’. That was the exciting part.” The graphs had made them think about what caused the changes and they couldn’t avoid what they were telling them about their own practice.

To conclude this meeting, I asked Isteam to reflect on the way they had been learning throughout this research project. I wanted to know what it was that had enabled them to become more confident and competent builders of their professional learning communities. One thing that was clearly stated was the motivational impact that being a close group had had on our own practice. Isteam made comments such as: “I get re-motivated by you guys”; “it’s the group cross chat, it’s more important than we realise. (Ideas) just happened because we’ve been together;” “Yes, P had done it so we try it;” and “You go in and try it, I see it and think I might try that too.” These comments strongly identify that they felt it was the collegiality of group that helped to build both the group and individual knowledge and confidence through both the face to face and the online environments.

Several comments were made about the impact of my questioning techniques which had left them feeling “slightly uncomfortable” but had ensured they reflected on their actions. “I don’t feel pushed, but I feel moved not to sit back...with someone else asking the questions I will go in and do it.” One compared the questioning to an early childhood theorist’s phrase of “warm demanding” showing that Isteam were making definite connections to their own contextual knowledge.

4.3.4 FACE TO FACE MEETING SUMMARY

This space initially provided a comfortable and vibrant place to learn *how* to use the online environment and to unpack the growing understandings of our research, but as time progressed we learned to challenge our thinking and understand *why* things were happening. In the beginning, there was a heavy frontloading of technical knowledge as Isteam became familiar with the programmes they would be using during the year with their teachers. This quickly became a by-product of other learning as Isteam became much more self-reliant and confident in their ability to work things out themselves. Research knowledge was a focus for a longer period as the work began to generate data that needed to be analysed and understood. Understanding the way their communities were behaving required reading and rereading of the current literature and this discussion was stronger towards the end of the project as we recognised and queried our teachers and our own behaviours.

Our limited prior awareness of the importance of community building meant that social practice discussion was virtually not present until the online catalyst 'name the pup' event and even then this never became a dominant conversation category in the face to face meetings. However the pedagogical talk that had begun as a relatively minor part of the meetings grew in strength as we started to understand what the data were saying and become more proficient at analysing what was happening in our respective communities. These meetings provided a platform to challenge each other to critically reflect about what we were doing rather than what our teachers were or were not doing, but this higher level of thinking required several months to achieve.

4.4 ONLINE DISCUSSION PAGE

The wiki was a key tool within this project, serving to support, encourage, store ideas and emerging knowledge, and as a key communication tool for Isteam who worked away from the office for significant periods of time. There were several key ways this was done. Firstly, the wiki was a way for me to keep the momentum going between meetings, to ensure each participant was motivated and encouraged to keep going. Secondly, it was a 'sandpit' (practice place) where we tried out our emerging understandings. There was an expectation that Isteam would use the wiki solely to communicate outside of face to face meetings (email was actively discouraged) so that the ability to manage the environment was strengthened. Added to this, the sandpit approach was used to share and practice emerging understandings of how to engage participants. I used the wiki to try different strategies with Isteam and they were encouraged to contribute accordingly. A third function was to challenge Isteam to address issues within their own communities and relate their practice to the research. Finally, the space allowed Isteam to learn about data. None of the Isteam had been involved in gathering and analysing data in this way before, so they developed their research skills within this environment and were encouraged to make connections with evidence through the wiki. Underlying all these intended functions, the wiki evolved into the social hub of our practice where we shared stories and opened up our personalities to each other.

While the face to face meetings generated transcripts of the taped discussions as the 'document' (Denscombe, 2004) or source of data, the discussion page of our wiki was the document for the online aspect of the blended learning community. A content analysis (see Chapter 3) of this document based on the three emergent themes from the face to face meetings (building knowledge, social relationships and pedagogical capacity) showed that while the themes were present in the online environment, they presented themselves slightly differently online to how

they appeared in the face to face meetings. Seven types of talk were used by ISTE ,me as we built our professional learning online (see below).

The themes as they emerged from the online discussion page are explained below.

1. **Building knowledge:**

- *Administration* – Setting dates for meetings, clarifying tasks, ensuring we were on track with procedures and timelines.
- *Technical* – Building up knowledge about how to manage the wiki environment and other web 2.0 tools that were introduced during the project
- *Research* – Developing knowledge and understanding of how to gather, analyse and interpret information as it was emerging

2. **Building social relationships** – Friendly, often 'off task' conversation that built relationships and encouraged participation.

3. **Building pedagogical capability**

- *Modelling* – Conversation that exemplified how to engage participants.
- *Sharing ideas and scaffolding practice* – As new understandings emerged they were shared with the group to support the ways they could work with their teacher groups.
- *Challenging* – Comments that asked Isteam to justify their thinking and explore possibilities beyond the surface features.

As with face to face meetings, these themes have similarities with the findings of research by Wenger (2002), Lai et al. (2006), and Garrison and

Vaughn (2008), who recognised the importance of building a sense of community or social presence, alongside cognitive capacity.

To statistically analyse the wiki discussion page, each line of entry was categorised as one of these themes using the sub-headings above as a guide, and monthly tallies of both the researcher and Isteam contributions were made. In this section of the findings chapter, I will demonstrate how these conversation themes evolved and worked together to build the professional learning community.

4.4.1 DISCUSSION PAGE ANALYSIS

This section will firstly present the statistical findings of this analysis of the wiki discussion page 'document' to visually show how the relative proportions of these categories changed over the duration of the research project. I will then unpack qualitative data from the wiki discussion page to indicate possible reasons for the rise and fall of input in different categories. This latter analysis will show when these categories of comments were most strongly used and how they related to and relied on each other in a symbiotic way.

The following graph compares the types of discussions that were made and show the way the contributions changed over time. The trends will be briefly discussed alongside each graph, followed by the use of qualitative examples to unpack the data more deeply.

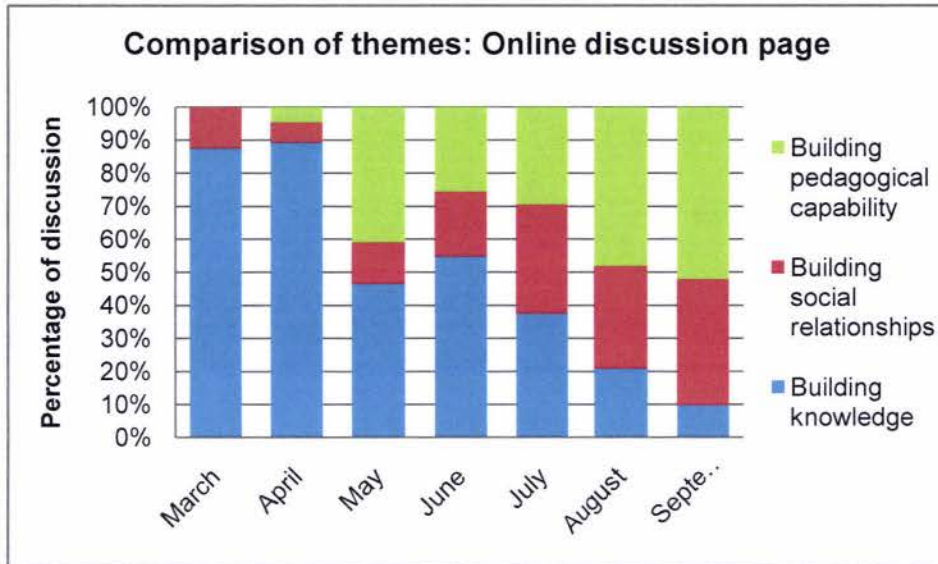


Figure 6 Comparison of themes evident in online discussion page

This graph shows that the clear emphasis in the early phases of the project was on building knowledge. This continued to dominate until July but then dropped away to become a minor part of our online discussion. Pedagogical conversation had an initial surge in May when Isteam began reporting back about what they had been *doing*, but in July this raised a level as we began to talk about what we were *learning*. While pedagogical discussion had been steadily building up to this point, it didn't dominate until August, but it was still holding that position at the end. Awareness of the need for social conversation online didn't really come about until July, after which it went on to become a key element of the online discussions for the remainder of the research.

The following section will expand on this brief outline and develop some understanding of the causes of the trends they depict. I will give examples of each of the three categories of discussion to give more depth and show how they evolved or devolved during the research project.

- KNOWLEDGE CONVERSATION

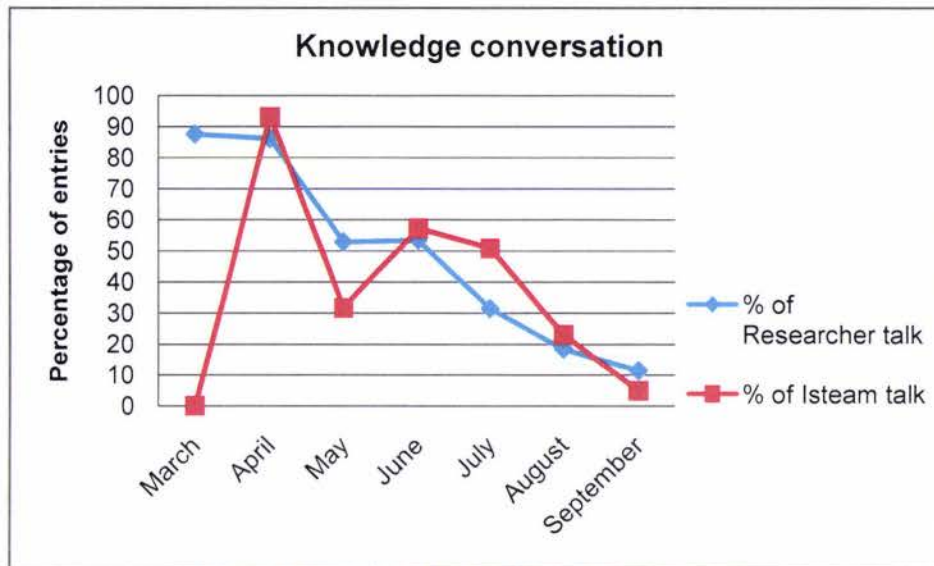


Figure 7 Progression of online knowledge conversation

This conversation category, which was made up of administration, technical and research knowledge building, clearly trended down during the research period. Although I initially lead the way in this category, Isteam matched the trend closely once they were confident online. The clear initial heavy focus on knowledge conversation was attributable to Isteam's need for technical support and understanding of data management in March and April, but as their technical and research confidence grew this decreased dramatically. By June, Isteam were analysing their own data and needed to unpack the relevant research to help make sense of it, causing their knowledge conversation to spike again. After that we began to generate our own knowledge and 'top-down' conversations of this type declined steadily.

Administration detail was evident in the early phase of the online conversation with comments such as 'Looking forward to seeing you on Monday ... at 2pm', or 'I've got all your surveys now'. These comments were mainly intended to maintain contact, but were covertly encouraging Isteam to use the wiki to establish a communication base. As meeting notes and data became available, comments such as "minutes from the April 24th meeting

are now on the [meetings page](#)” also tried to encourage participants to use new techniques (such as hyperlinking). This often meant questions were then raised about how to do this.

Technical talk was mainly ‘how to’ requests or around the introduction of new e-tools. As Isteam gained technical confidence and learned new ways of working online, they would put instructions up on a separate page on the wiki but these were not discussed. In general, comments about new programmes or how to fix technical issues were not often discussed via the wiki, Isteam preferred to deal with these issues face to face.

While administration and technical talk diminished quickly, research talk was sustained for a longer period. Isteam needed the capacity to use evidence to support their developing understandings, so the ability to gather and interpret data was important. It was also important to make sense of what they were finding in terms of the research they were looking at to guide their thinking.

In April, small reminders about data that needed to be collected were being placed on the wiki but not discussed, but by the beginning of May Isteam were responding. By this stage I was helping to interpret the INSTEP project requirements to ensure Isteam knew what they were expected to do.

Researcher: ‘A’ suggested we need to keep diaries to monitor the things we are doing. All of you are making comments about what your teachers are asking and the suggestions you come up with to help them. You need to write these things down, this is the ‘intervention’ that we need to know about so we can see teacher shifts and identify our role in them.

By July I was encouraging Isteam to make connections between their findings and the literature review they were reading (Lai et al., 2006) to show how patterns were developing in line with the findings of this synthesis.

Researcher: Wenger (2002) suggests 'bounded groups'...If you have a look at the wiki that 'P' is running, she formed such bounded groups when she set up pages for her schools within her wikis.

Immediately after this comment such connections with the literature started happening in both directions as the Isteam became familiar with the emerging themes. As they made links between the literature and the data they were generating, the knowledge *building* evolved into pedagogical reflection as they started to recognise and understand what was happening on their own sites. However this reflective thinking online required a different way of 'talking' and behaving to create the opportunities for this to happen and this was the use of 'social' conversation.

• SOCIAL CONVERSATION

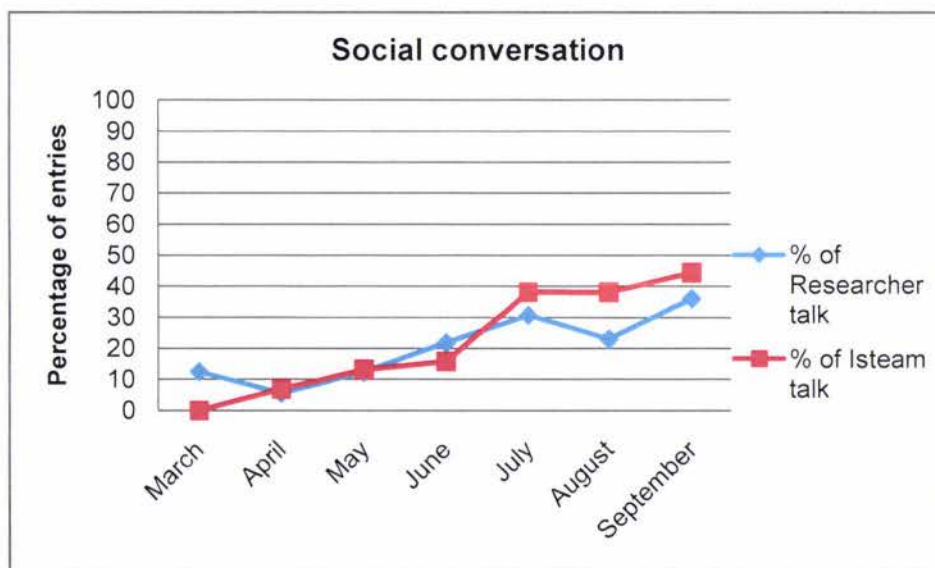


Figure 8 Progression of online social conversation

Social conversation was significant in the development of the online aspect of this learning community, but as the graph suggests, it wasn't obvious until the group had been working together for a quite a few months. This social conversation category trended up during the research period and once again, my level of input in this category is matched by Isteam's although they

were more sociable online towards the end of the project. Once social talk was recognised, it continued to climb in relation to other talk and become an important online genre for the remainder of the research project.

In April all comments on the wiki were informative and nothing was said that wasn't directly related to the work we were doing together. In late June, the catalyst for change occurred in the form of a 'name the pup' competition. I had put a photo of a new pup on the wiki and asked for ideas for her name, with a chocolate fish bribe offered for the best idea. This generated a full page of responses that were immediate and sustained over a 5 day period. At a face to face meeting immediately following this event, 'social' conversation was identified and recognised for its power to shift levels of engagement. It was an 'aha' moment for us all and significantly decreased the formality of language on the wiki which now began to mirror the conversations we would have face to face. Having an online conversation about working alone in an earthquake damaged building (as one Isteam did) was much easier apparently than trying to have an intellectual discussion about data. This type of talk became common and was often done as a way of recognising, supporting and encouraging the work of other members.

The appreciation of the effect of social conversation, not necessarily related to the core focus of the learning community, impacted strongly on the direction Isteam took with their own wikis. By September, Isteam were throwing virtual parties, where they asked teachers to 'bring' something for the party and put it on the page as a way of encouraging them to engage more comfortably and have a bit of fun at the same time. This generated a lot of comment from Isteam as they challenged each other to do things 'outside the box' to make the party even more fun.

Isteam: Well done G. Love the virtual party. Trying to find a picture to depict a hangi. Let's lay it on!!!!

Although our casual conversation was initially light-hearted and often seemingly 'off task', as the conversation style became comfortable the comments could also be interpreted through a pedagogical lens. For example, on the surface the discussion about virtual parties seemed to be about having fun but it was actually a conversation about strategies to overcome teacher barriers to engaging online. Interestingly this type of talk also got the Isteam talking virtually to each other rather than mainly to me as had previously been the case. The following section further discusses this pedagogical style of conversation.

• PEDAGOGICAL CONVERSATION

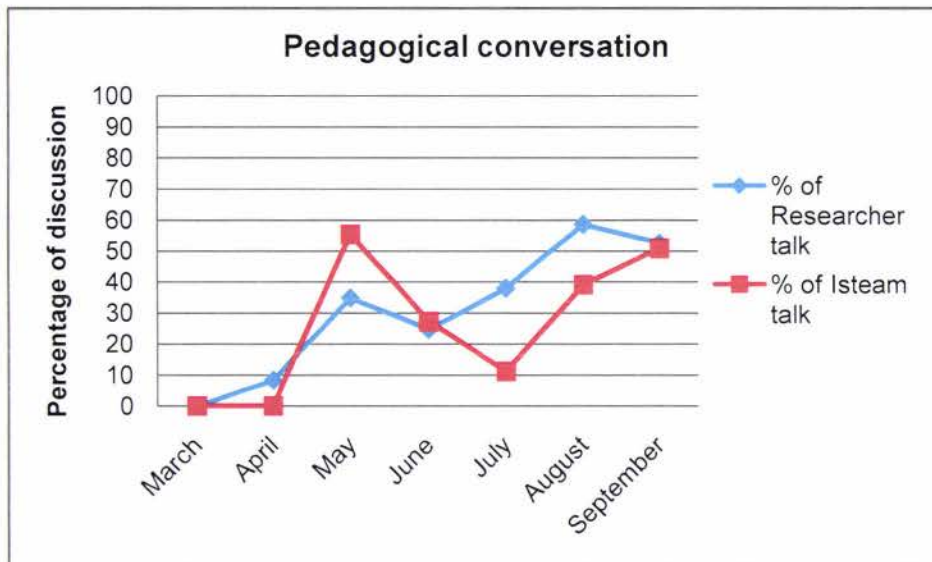


Figure 9 Progression of online pedagogical conversation

Pedagogical conversation was more erratic in its pattern than the other two categories of talk but it clearly trended up and became the dominant conversation after July. There was some separation between my practice and that of Isteam, with me generally placing more emphasis on this category than they did. However by the finish of the project, this gap no longer existed.

The spike in May happened after I had demonstrated one Isteam's wiki to her professional learning community in a face to face meeting. The demonstration was fraught with technical issues and I decided to model online reflection by talking about those issues on the Isteam wiki:

Researcher: You'll be happy to note that things didn't go that smoothly. We couldn't get either the Telecom or Vodafone air cards to work ...The screen needed to be propped up with pillows (and fell down) and the teachers needed to sit on the floor to see it as the power cord wasn't long enough to let them stay in chairs. Finally, I took some photos with the school camera but the camera card didn't fit the computer... All in all, it wasn't a great way to encourage teachers to see what a useful thing this wiki could be. But... we did get into the wiki ... and showed them what they could do, and *I* got a lot of practice at learning what *not* to do.

This was followed by a 'next time I will' list of ideas for my own practice, including both technical and pedagogical suggestions. As a result of this, comments from Isteam, which up until that point had been purely administrative in nature, immediately changed. Through opening up my own practice to the group online, other participants began to tell each other what they were doing and also began to reflect online themselves.

Until this event in May Isteam had not been confident to share what was happening in their own learning communities. Personal conversations with individual Isteam suggested they were expecting an online professional learning community to instantly happen once the environment was provided, so when significant steps were happening, these were not noticed.

To help overcome this issue, in June I began to post links to their teacher wikis to ensure others could see their good practice. These links were contained in conversation that plainly exposed the things that were happening, whereas Isteam themselves had tended to talk about what was *not* happening.

Researcher: I've been trolling through a couple of your wikis and there are teacher comments coming through...they are actually reflecting on things.

Often my comments would highlight strategies they were using to try to engage teachers and gather teacher voice about the direction of their online learning communities. For example:

Researcher: R is getting people commenting by using questioning strategies...P has linked her wiki to a Skrbl page and asked teachers to write down what they want from the wiki. It will be interesting to watch and see if they are prepared to put down some ideas.

By July Isteam were clearly following these links up as they were commenting online with questions or offering further ideas that these strategies had generated for them.

For the first two months I did not use the wiki to challenge the Isteam's thinking or practice, mainly to ensure they were comfortable and had the technical knowledge and skill to be able to work online. My input had been generally 'tell' rather than 'ask' comments, and they had certainly not required deeper thinking. In early June the first attempt to challenge thinking occurred when questions were put to Isteam about some teacher contributions that were on one wiki. Isteam were asked to think about what was happening and how to engage other teachers in the conversations. One learning community had a teacher writing really engaging material but it had not been talked about at all, by teachers or the adviser.

Researcher: How could we share these stories with others? What do you guys suggest P does with this material to encourage others to contribute at this level...what would be the best way to interact with this...so that others would start to comment, feedback, ask questions around such things as how it is used and what the results have been?

June was obviously still too early for this level on challenge in the online environment as Isteam did not respond at all at this point. However by July, after the response to the 'name the pup' competition had been unpacked

and understood in our face to face meeting, this changed and challenging talk became a frequent online strategy. After one conversation in August about the shifts that were happening on one Isteam's wiki and the most likely cause of the increase in activity, I began a list of possible strategies and invited Isteam to trial and add as they came up with new ideas. I then asked them to think about my comments in the following way:

Researcher: ...how much of the above conversation is technical help, how much is developing social confidence, pedagogical challenge, scaffolding, reflective thinking, top-down 'do this' etc?

This was the first time the themes of technical, social and pedagogical appeared, although it wasn't recognised by the group at the time. As a result, the strategies page on our wiki which had begun as merely a list of *barriers* identified from Isteam's teacher questionnaire, evolved into targeted strategies for *developing* technical, social and pedagogical confidence and engagement. Isteam then tried these out themselves and reported back about their success or otherwise.

By August we recognised that we were in the pedagogical phase of our research ourselves and so 'challenge' became the dominant researcher conversation. Sentence stems such as 'I wonder', 'do you think', 'perhaps we could', 'do we need', 'how are you going to facilitate'... became common place.

By the end of the project in September I had increased the intensity of the questions. Isteam were supposed to be finding out about their own practice but some had drifted into talking about what their teachers were or were not doing, so the challenging questions became stronger as I reminded them that they should be driving their wikis.

Researcher: So what are WE doing about the issues we are experiencing? If they are lurking, great, they're in, so how do we take

them the next step? If they don't see the value in the wiki, what are we doing to make sure they have a reason to go there?

Isteam: with regard to my next step, well, I know I have to get the camera out again. I have tried to get teachers to take photos and put them up on the wiki. So far, nothing has happened. I might have to use a H strategy of being pushy/challenging – make them take photos while I'm there...to provide the stimulus to encourage and promote discussion...give them a reason to go there...Yep, we are in charge and I'm realising the importance of monitoring my wiki.

This response shows she had moved beyond facts and was reflecting on the challenges laid down. She not only happily answered my challenge, she recognised the weakness in her practice and identified her next steps. Although this type of response happened freely in the face to face meetings, it took six months of very intense work to achieve online. However it clearly shows the next phase of the project had arrived. Isteam online had moved from being a sharing community to a collaborative community and were at last prepared to be 'thinking pedagogically' online.

4.4.2 ONLINE DISCUSSION PAGE SUMMARY

In conclusion, the way we 'talked' online was subject to a lot of influences. As we became more competent with the skills and knowledge related to the work we were doing, we relied less on using the online environment to support us. As we became comfortable sharing our personal lives, we learned how important it was to be able to relax online if we were going to engage our participants. But of vital significance, once both of these factors were recognised we were able to become a truly reflective professional learning community who just happened to be using an online platform for voicing our thinking.

The following section will discuss the findings from the summative questionnaire when the research project was coming to an end.

4.5 SUMMATIVE QUESTIONNAIRE

At the end of the project in September, Isteam were given an online summative survey. The initial baseline questionnaire was adapted and used as a summative tool and Survey Monkey (<http://www.surveymonkey.com/>) again both collected and collated the data (see appendix three). The findings from the summative questionnaire identified knowledge shifts in thinking about professional learning communities, particularly blended ones as these were not recognised prior to the project commencing, and identified how Isteam felt these had impacted on their core facilitation work with teachers. It also identified the shifts in their levels of technical confidence now that they had worked through the project.

Of particular relevance to this thesis however was the 'ISTE support' section where Isteam were asked to describe the impact our professional learning community had had on our own learning and how this had changed the way we engaged with each other. Although I will briefly outline the sections relating to the shifts in their professional knowledge and technical confidence, I will focus on the impact of the research on Isteam practice.

- SECTION ONE: PROFESSIONAL LEARNING COMMUNITIES

Professional learning communities were now seen as a way of solving an issue rather than a place for debating generic cognitive thinking. Isteam emphasised the need for 'a common interest, challenge or focus of inquiry' where members would 'co-construct a way forward' as a result of working together.

- SECTION TWO: BLENDED LEARNING COMMUNITIES

All Isteam mentioned the importance of three key things to engage effectively in a blended learning community: a common purpose, relationships and technical ability. Mention was also made of the need for good leadership and a desire to learn.

The benefits of blended learning communities for Isteam fell into two general categories; making their workloads more manageable and raising the professional learning of the teachers they were supporting. With effective use of blended environments, Isteam could cut down the time spent trying to meet teachers' needs and "reduce the travel and repetition of some aspects." Placing material on the wiki meant teachers could all access it when they needed to rather than Isteam having to repeatedly respond to individual requests.

Secondly, such environments helped to keep the momentum going between face to face meetings which enhanced the sustainability of the professional development support. By maintaining contact online, teachers were 'seen' and could be encouraged to follow through with suggestions offered in face to face environments. Isteam considered that the learning potential was significantly higher under these circumstances and already the teachers they were working with were using each others' strengths to solve their problems. Isteam also recognised that by reading the teacher online contributions, they were able to identify their real levels of understandings and prior knowledge. This could impact on their programme planning and delivery and enable them to better meet the needs of the teachers they are working with.

When asked what issues they had in establishing their learning communities, the responses were predominantly about getting teachers to engage.

Keeping up strategies for participation; not realising how much 'social' stuff was needed at first especially when good face to face relationships already existed.

Having to remind people to participate, I felt that if I was having to do this, maybe it was not a goer...not being able to engage face-to-face often enough to re-enthuse members has probably been my biggest issue.

Of the 13 comments made in response to this question, there were 10 references showing that Isteam themselves now expected to take responsibility for making their communities work. 'Remembering to put something out there to share', or 'convincing teachers of the need' and 'having to remind people to participate' indicated that Isteam knew it was their job to get teachers to engage in building the community if it was to be effective. Only three comments about lurkers not wanting to participate and lack of technical skill placed the responsibility on the teachers rather than themselves to ensure success.

• SECTION THREE: TECHNICAL CONFIDENCE

Overall Isteam reported that their technical confidence had increased dramatically since the beginning of the project. In all aspects of the management of online environments, responses rated between 3 and 4 on a scale of 1-4 (1 was no confidence, 4 was independent).

• SECTION FOUR: ISTE SUPPORT

The final section of the questionnaire asked Isteam to rank aspects of the support I had provided in relation to their impact on their practice. This section used Likert scales to indicate how often they had accessed my help, and to rank how important different aspects were.

Isteam's use of me prior to this project was minimal apart from when they had problems with their computers. All Isteam now used me to support their work with teachers; for example, helping them to run workshops or talking about strategies to make use of the online environment more effectively. Isteam generally made monthly use of me to support the development and use of data tools and to analyse and use data they were now gathering.

Both data and teacher support aspects of this question about how they were using my support had the highest average rating, yet in the baseline questionnaire it was the technical support that rated the highest and the teacher support that ranked the lowest.

The question that asked about relative importance of different aspects of support used a scale that ranged from 'not important' to 'vital'. Isteam were also asked to comment on each aspect. Responses showed that all Isteam considered understanding the gathering, interpretation and application of evidence to be vital to the success of this project. One Isteam said:

Gee this was a biggie for me...a huge growth and learning area, much of which I can utilise in my everyday work in schools...the relevance of this has far reaching application for me.

This 'vital' label also applied to the face to face meetings and wiki feedback, both of which were strategically used to challenge practice and thinking. ISTE felt our meetings proved the need for face to face contact to support online work and were "great for sharing, discussing and co-construction of where to next."

The wiki was considered a 'sandpit' or test area as much as a way of maintaining contact and the feedback participants received online was highly valued. Isteam commented that the feedback on the wiki:

Showed me where I could be going and what strategies were working or not

Gently gave the hard word if not much else was happening...

Was important for confidence, reassurance but also for moving things on in a variety of ways...very motivating.

The questioning strategies I used in both these environments grew in intensity as Isteam's confidence and knowledge grew and Isteam considered this to be 'vital' in the project's success. For example:

This was vital as it ensured we reflected on our practice, met challenges head on and continued to move forward.

Rough to handle but absolutely imperative...making me think rather than just merrily go along with the same old...

The technical help Isteam had available whenever it was needed was “vital to the success of the project and my ability to scaffold my teachers.” They realised the positive impact this had because it decreased the time they took to learn new e-tools, but it also provided the knowledge they needed to be able to repeat the exercise with their teachers.

These ‘vital’ aspects relate to the way their pedagogical knowledge was challenged rather than the building of their technical knowledge. This mirrors what they were expecting of me when asked a similar question at the beginning of the project (see section 4.2.5). They had asked to be challenged and that is what they valued the most as a result.

4.5.1 SUMMATIVE QUESTIONNAIRE SUMMARY

Overall the summative questionnaire has shown that Isteam have a broader view of the benefits of blended learning communities as a result of being involved in one themselves during the research project. Initial beliefs relating to the increased opportunities for pedagogical support available through properly managed environments have been confirmed. Isteam also recognised that engaging teachers in these communities had a big impact on the sustainability of their work. Isteam did say that there was a considerable effort required on their part to realise the potential of these communities, but recognised their roles in accepting the responsibility for their success or otherwise.

Isteam’s technical confidence and competence has improved dramatically over the year, but perhaps the most noticeable change has been their understanding of the impact the research project has had on their practice.

Finally, Isteam made it clear that working as a blended learning community has changed the way they work as inservice teacher educators and there is a clear wish for this collaborative way of working to continue.

4.6 CHAPTER SUMMARY

Four sources of data have been used to show the way that Isteam were facilitated through their professional learning in this research project by working as a blended learning community: a baseline questionnaire, transcripts of face to face meetings, an online discussion page from the wiki and a summative questionnaire. As findings emerged from these different sources, they were used to inform the next iteration of the action research process.

Entry level data showed that Isteam were well skilled in their practice as advisers but had little real appreciation of the different nature of online learning communities to the face to face communities they were familiar with. This data also showed that Isteam were not used to working collaboratively to build their understandings of practice in this way yet they were expecting their teachers to do this to sustain their learning.

Thematic and content analysis of face to face meetings and the wiki discussions have shown that while the online and face to face learning communities function differently, each has strengths that can be taken advantage of if the environments are effectively used.

A key finding of the analysis of online and face to face conversations was that knowledge needed to be heavily front-loaded in both environments, although it quickly fell away, but that the growth of new knowledge or "learning in practice" (Lai et al., 2006, p. 49) didn't happen until the learning

community had been operating for several months. However when it did begin, it quickly dominated the way the group functioned.

Developing social confidence online was a vital component in the emergence of this 'learning in practice' talk. Socialising online allowed Isteam the level of comfort necessary to engage in the truly reflective conversation required for cognitive development. Through building research capability, Isteam learned to inquire into their own practice and grow new knowledge and understanding and shift their own ways of working with teachers. Recognising that they needed to take the lead in this growth was a turning point for all.

The following discussion and implications chapter will synthesis the findings outlined here and relate these findings to the literature discussed in Chapter 2 to show where there is alignment and possible variation. I will also identify some implications for the work of ISTE and suggest areas of future research that this research opens up.

CHAPTER 5. DISCUSSION AND IMPLICATIONS

- 5.1 Chapter overview
- 5.2 Synthesis of findings
- 5.3 Strategies for the facilitation blended learning communities
- 5.4 Limitations of the research project
- 5.5 Implications for inservice teacher educators' practice
- 5.5 Suggestions for further research
- 5.7 Conclusion

5.1 CHAPTER OVERVIEW

This research project has probed into the use of blended learning communities for the professional learning of ISTE within a New Zealand context. My research question was **“How can blended learning communities be facilitated to support the professional learning of inservice teacher educators?”**

To address this question, I formed a blended learning community consisting of two learning environments; face to face meetings and an online wiki, and used this to support the research participant group, known as Isteam. Isteam met physically in regular face to face meetings and 'met' virtually online in the wiki. By analysing the discussion that took place in each

environment, I was able to see how each was used by both the participants and me, and how my facilitation strategies and Isteam responses interacted.

This chapter will firstly synthesise the findings conveyed in chapter 4 using the three themes that emerged from the research. These were; building knowledge, social relationships and pedagogical capabilities. These themes will be used to show how the blend of face to face and online discussions developed deeper understandings as participants became more engaged over the duration of the research project.

Following this synthesis, I will identify the nine key strategies that I used and describe how I specifically facilitated these to bring about the changes and encourage richer professional learning for ISTE within the blended environment. This list of strategies, the key outcome of this research project, will clarify how I was able to work across the face to face and online environments and take advantage of their different strengths to significantly raise the professional learning of this group of ISTE.

I will conclude this chapter with considerations for how this work may impact on the future of ISTE professional learning and practice and offer suggestions for possible further research that may follow on from the work discussed here.

5.2 SYNTHESIS OF FINDINGS

In this section I will explain how each of the learning environments evolved using the three themes identified above to describe the shifts that occurred in the ways they were used. The Isteam professional learning community functioned across both face to face meeting and online wiki environments but in quite different ways. A key finding from this research project was that while the face to face meetings developed collective knowledge, the online

discussions were used more for personal knowledge. Despite this apparent separation of purpose, the learning that occurred in each environment relied on the learning that happened in the other. Neither environment on its own would have achieved the combined collaboration and reflection that Garrison and Vaughn (2008) say is necessary for higher level cognitive learning.

Garrison and Vaughn (2008, p. 28) point out that face to face learning is “collaborative before it is reflective” while online learning needs to be “reflective before it is collaborative.” Isteam used the face to face meetings to learn as a group; firstly to build their knowledge about Web 2.0 environments, professional learning communities and research, and then to collaboratively unpack their growing understandings from the work they were doing. As they became masterful of these aspects, they began to challenge their own and each other’s thinking and construct their own new knowledge together.

In contrast, the wiki was initially used to practice personal knowledge and build skills. The wiki was a much more personal learning environment despite the fact that anything placed there was shared with other Isteam. Once Isteam were more comfortable with their own online capabilities, they began to share individual outcomes with each other. In the later stages of the research project, Isteam began using the wiki to critically self-reflect on the various challenges each was facing while trying to establish their own blended learning communities. By the end of the research project, Isteam were starting to ‘talk’ collaboratively online about their shared learning and strategies for using blended learning communities effectively.

5.2.1 ISTEAM BLENDED LEARNING COMMUNITY THEMES

Three themes emerged from the analysis of the discussions in face to face meetings which were used to guide the more detailed content analysis of

these meetings and the online discussion page of the wiki. These themes were:

- **Building knowledge** about technical concepts and skills, research practice and professional learning community content knowledge.
- **Building social relationships** to develop trust and confidence
- **Building pedagogical capability** to encourage and support critical self-reflection on personal and collective practice

The two graphs below are a reminder of how these themes contrasted between the face to face meetings and the online discussion page. As these graphs show, the relative proportion of each of the themes is different in each of the two environments but all were present in each one.

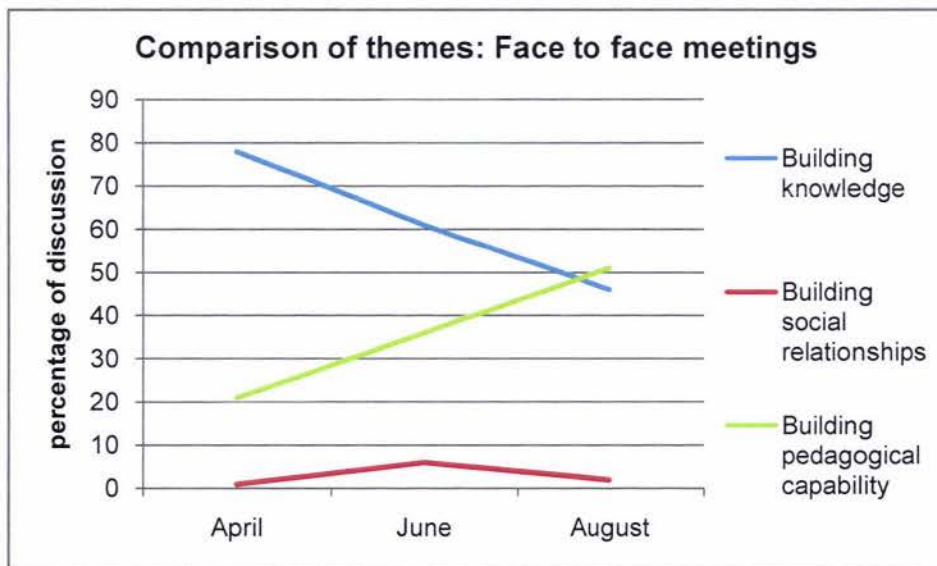


Figure 10 Comparison of themes evident in three face to face meetings

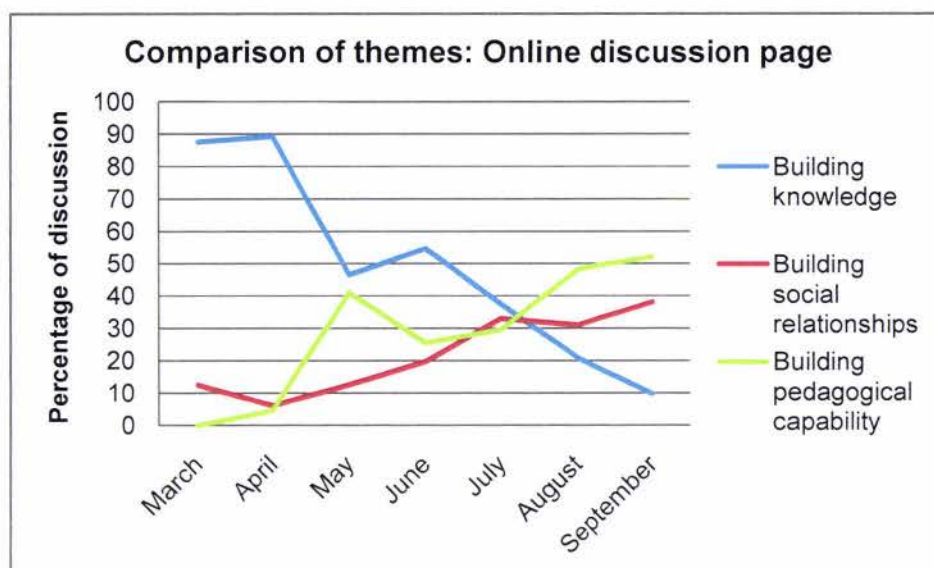


Figure 11 Comparison of themes evident in online discussions

Each of these three themes will now be discussed through comparing how they manifested themselves in the face to face meetings and the online discussion page.

• THEME ONE: BUILDING KNOWLEDGE

Of crucial importance to the success of this blended learning community was the heavy front-ending of knowledge to ensure Isteam had enough information to be able to succeed in *their* project's goal of using blended learning communities to support *teacher* professional learning. Isteam needed this knowledge at the beginning of the project to ensure they were comfortable with the way they were expected to work, and tapped into more knowledge as needed throughout the research project.

The overwhelming proportion of all discussion in face to face meeting at the beginning of this project was building collective knowledge, and while this reduced over time it was still just under half of the discussion content at the end of the research period. The knowledge emphasis was on building common understandings: Isteam unpacked new content knowledge, learned

how to manage the wiki and other Web 2.0 tools, and learned how to gather, analyse and make use of data in appropriate ways to ensure they were able to achieve their goals. Face to face meetings proved to be a good vehicle for the collaborative sharing of ideas and information and for building group confidence and competence.

In contrast, the wiki was used by Isteam mainly to develop personal rather than collective knowledge. It was used to practise learning and identify what each individual needed to know next. Isteam accessed the wiki when they were on their own and had time available and this allowed them to practise away from the pressure of others who may have had stronger or different skills. During the early phase of the project much of the online discussion related to 'how to' questions and answers. As Isteam became more confident, this knowledge discussion shifted from building personal knowledge to sharing personal practice.

Knowledge discussion was an even more dominant theme on the wiki in the beginning than it was in face to face meetings, but unlike the face to face meetings, it quickly faded away and became almost insignificant at the end of the research project.

While the wiki proved to be a good place to practise personal skills and demonstrate learning, it was not a particularly useful platform to build research or content knowledge. It seems that without the speed and spontaneity of response, participants lacked the ability to feed off the ideas of others.

• THEME TWO: BUILDING SOCIAL RELATIONSHIPS

Almost without exception, the existing research about professional learning communities (e.g. Garrison & Vaughn, 2008; Wenger, 2001) points to the essential nature of building social relationships if the community is going to be successful. However building social relationships within the Isteam

blended learning community was not something that was a deliberate goal in the beginning of this project, probably because we were all colleagues and in most cases had been working together for some time so we didn't consider it necessary. What hadn't been factored into that unconscious decision was the difference between relationships within a familiar face to face environment and those that are necessary for an online environment to function effectively.

However the data only showed that Isteam did not actively build social relationships amongst the group *during* the face to face meetings. There were no activities designed to allow the group to get to know each other, no talk designed to overcome barriers, and very little non-work related social chat. When discussing this finding with Isteam, one suggested that the data did not show the relationship chat that was dealt with *before* the meetings, the lattes that were sometimes purchased on the way, or the group dinners that were had if we were all working together away from the home office. To this extent the type of face to face meetings data gathered (taped discussions) did not paint a full picture of what may have been happening in terms of building social relationships. Transcripts from the audiotapes were also not able to record the subtle use of "physical cues and vocal intonations" (Garrison & Vaughn, p. 52) that are commonly used to convey trust and support when people are physically together. Meetings were jovial occasions (at times laughter made transcribing the tapes difficult) but they were intense and focused. Essentially the group was building social relationships within the overall research project, but did not use the discussion within these face to face meetings to do so.

In contrast, the wiki demonstrated steady and significant increases in social relationship discussion. Garrison and Vaughn (2008) suggest that participants need to "project themselves socially and emotionally as real people" (p. 28) to develop 'social presence' online and although it didn't

happen immediately, once Isteam began sharing non-work related events online such as catching up after a weekend, they realised how valuable this was to their ability to engage. Talk like this was comfortable and non-threatening as it was not focused on their deeper knowledge; they didn't need to really 'know', in an academic sense of the word, what they were talking about to be able to write in this way.

Small personal online successes were demonstrably acknowledged by other Isteam as each realised how significant the learning was. When they shared their own work, compliments flowed freely. The discussion on the wiki was entirely positive; this environment was not the place for any degree of conflict. Isteam used the wiki to build each other's confidence and recognise success, and that was vitally important to the sustainability of the overall research project.

What was very clear was that online social relationships needed to be deliberately constructed. As Garrison and Vaughn (2008) suggest, a group may already know each other or meet regularly face to face, but their 'social relationship' does not automatically transfer to an online environment without conscious design.

The two environments were used very differently for this theme of building social relationships. Face to face meetings were focused, timed events that met an agenda; online discussions were individual encounters without such limits. Isteam needed to work hard to build each other's confidence to make sure the online environment was effectively used, and they recognised this. Clearly tacitly understood ways of behaving meant the face to face meeting environment did not need to have the same social relationship building effort put into it.

• THEME THREE: BUILDING PEDAGOGICAL CAPABILITY

Garrison and Vaughn (2008) use the term 'cognitive presence' to describe the "extent to which learners are able to construct and confirm meaning through sustained reflection and conversation in a critical community of inquiry" (p. 28). Isteam referred to this type of discussion as pedagogical talk as it related to the way they thought about their practice. This talk took quite a while to occur in either the face to face meetings or the online wiki environment.

As already said, the initial phase of the research project was heavily used to build knowledge but simply learning about other people's findings and the 'how to' of research and Web 2.0 environments was not sufficient to shift thinking in the way Annan et al. (2003) claim was necessary to alter practice. This required a high level of cognitive discussion involving critical reflection, collaboration and inquiry (Garrison & Vaughn, 2008), and all of this required knowledge, trust and confidence.

The face to face meetings were an easy environment to begin pedagogical discussions. Garrison & Vaughn say face to face learning requires "verbal agility, spontaneity and confidence" (2008, p. 31). By being together Isteam were encouraged to justify their thinking to each other in a fast moving interchange of ideas from the start of the project.

Face to face meetings were also a good vehicle for sharing artefacts such as data and evidence. Quantitative and qualitative data from the questionnaire and the wiki were explored when we were together and effectively used to identify patterns and challenge thinking. Each Isteam shared stories about the progress they had made since the last time they had been together and as this happened, the rest of the group teased out the strategies they could identify from the stories. From this they began to challenge the facilitation actions being described and collaboratively develop ways they could adapt them to suit their own blended learning communities. As a result of this, the group developed a table of strategies that would eventually sit within the

three themes of building knowledge, social relationships and pedagogical capacity in teacher blended learning communities. This table of strategies became the key outcome of their INSTEP project.

The wiki environment was much slower to show this level of pedagogical discussion. Isteam had expected this to be almost instant but in reality they only really started talking reflectively online in the last two months of the research project. Isteam suggested this was because by this time they had internalised the knowledge they required, relaxed 'socially' online, and reflective talk was now part of the way they communicated as a group face to face so it was easier to keep this going online.

The key difference in the way the two environments were used for developing pedagogical capability was that the discussion on the wiki was about becoming *personally* reflective while the face to face discussion was more about the growth of the *group's* collaborative ability to critically reflect on *their* collective knowledge and learning outcomes. However, as Garrison & Vaughn (2008) suggest, by the end of the research project both environments were, at almost identical levels, being actively used to combine collaborative and reflective discussions which enabled the construction of significantly different pedagogical schema.

The following section will describe the strategies used to build professional learning through using blended learning communities and identify the specific acts of facilitation that were used within this research project.

5.3 STRATEGIES FOR THE FACILITATION OF BLENDED LEARNING COMMUNITIES

Identifying strategies to facilitate blended learning communities for the professional learning of ISTE was the intended outcome of this research

project and this section will identify these and address how they were used. As a result of this research, I have identified the following nine strategies.

The facilitator of a blended learning community needs to:

- Contextualise the learning
- Build participant knowledge
- Create shared artefacts
- Build community relationships
- Use data and evidence from the learning community
- Use challenging questions
- Provide collective and personal opportunities for learning
- Vary the pedagogical approaches
- Give feedback

I will discuss each of these strategies in more detail in this section. Firstly I will explain the thinking behind each one through making connections to current research. For each strategy I will then list the specific acts of facilitation I used to develop them within this research project. Lastly, I will give one example from the research project to put that particular strategy into context for the reader.

While the face to face and online environments wove together to strengthen the learning opportunities, at times different facilitation was required to make the most of each learning environment. The different personal or collective focus of each environment was a key reason for this within this research project. While Isteam may have used each environment differently, it was the weaving of both that proved to be vital to the overall success of the

'professional learning experience'. As a result, the strategies that follow will be discussed through a blended lens rather than separating them into face to face meeting and online learning environment strategies.

• CONTEXTUALISE THE LEARNING

Strategy: Build the blended learning communities within a meaningful context.

It is important to have a clear focus at the beginning of the work. The participants will share a common concern, problem or need, and this must underpin the blended learning community's identity. Garrison & Vaughn say (2008) that effective professional learning communities emerge from environments where learning is situated and authentic. Timperley et al. (2007) add that professional learning occurs within the social context of the educator's practice. This context helps participants to develop the meaning and implications of new knowledge through negotiation amongst the participants.

My acts of facilitation:

- Created a blended learning community for Isteam so they were able to directly transfer their learning to the teacher blended learning communities they were developing.
- Looked for and used material from Isteam's teacher wikis to exemplify new concepts and learning.
- While each Isteam reported back on their outcomes in the face to face meetings, I challenged the others to make connections to their own work and think about the implications for their underlying research question.
- Used new Web 2.0 tools rather than traditional approaches whenever possible. For example when Isteam needed baseline data they were

shown Survey Monkey, when they wanted to brainstorm in workshops they were shown Skrbl, and in preparation for workshops they were encouraged to use their wikis to collate material.

- Made Isteam complete their baseline questionnaire online to scaffold how Survey Monkey worked.

Isteam example:

Using a blended learning community to support Isteam's learning *about* building blended learning communities was fundamentally the most effective strategy for this project. Each Isteam had to develop an online learning community as part of their own INSTEP research. This added to the contextualisation of the research as it gave them a way of testing strategies and new learning as it arose. It also provided data that informed their decisions. Contextualising the learning in this way ensured Isteam were all experiencing and able to share similar outcomes and concerns, and that these were highly relevant to their needs.

• BUILD PARTICIPANT KNOWLEDGE

Strategy: Build up the participants' base knowledge first before expecting them to engage in critical reflection on their own practice.

The early phase of building a professional learning community, as Wallace and St Onge (2003 para. 11) say, is when the “foundation pieces on which the community is built” are laid down. Timperley et al. (2007) also identified that new information was front-loaded early in the process and through using a range of activities this knowledge was able to be translated into practice. They found that without in-depth content knowledge and skills, including the ability to inquire into the impact of their teaching on students' learning, there would be no base upon which to build the deeper understandings, nor would the shifts in practice prove to be sustainable.

Part of this foundation building requires identification of the participants' prior knowledge and needs (Wenger et al., 2002) so the knowledge resources can be designed to suit. Identifying the learning needs of the participants is recognised as a key element in the 'teacher inquiry and knowledge-building cycle' outlined by Timperley et al. (2007, inside front cover) in their Best Evidence Synthesis Iteration.

My acts of facilitation:

- Used a baseline questionnaire to identify Isteam needs so I could plan accordingly
- Became the helpdesk – online and face to face
- Used opportunities that presented themselves to use Web 2.0 tools to broaden Isteam's technical knowledge (e.g. using Survey Monkey for the questionnaire)
- Modelled new tools that I thought Isteam would find useful by putting them online. For example, putting pictures into a moving slideshow (Bubbleshare) or embedding Teachertube videos. This created 'how did you do that?' questions
- Was available on Skype if necessary when away from the office
- Built the capacity of others and provided opportunities for them to be used to solve problems, often by directing others to them
- Put a help page on the wiki and encouraged Isteam to contribute as they identified their own ways of solving technical issues
- Deepened their relevant professional knowledge by using other research to scaffold learning, particularly around building Isteam's content knowledge of professional learning communities and online learning communities
- Used the collaborative environment of the face to face meetings to build confidence, particularly around using the wiki

- At their request, worked with individual Isteam outside of face to face meetings and personally showed them how to do specific tasks such as analysing their data or increasing their proficiency with Web 2.0 tools

Isteam example:

Isteam asked for a significant input of knowledge at the beginning of this research project, particularly around technical skills and facilitation strategies. Such knowledge was generally introduced and unpacked face to face, and tested and practised online. In both environments the demand for it was strong in the initial phase and quickly dropped away as Isteam became more self-reliant. One Isteam commented in the summative questionnaire that this initial focus on knowledge was “vital to the success of the project and my ability to scaffold my teachers.”

Face to face meetings were the most appropriate platform for Isteam to come to understand the information and generate their new knowledge or ‘knowledge capital’ (Lai et al., 2006) as Isteam could learn from each other. This also ensured there were common understandings amongst the group. However to consolidate this shared learning, the wiki was used to practise the new learning. Without the wiki, skills learnt in the face to face meetings would not have had the opportunity to become tacit knowledge that Isteam could draw on when working with their own teachers. With this practise platform, any problems were able to be recognised within the group and dealt with before ‘going public’ with teachers. Once Isteam took any strategies they had learnt into their own online learning communities, they were then able to see evidence of the effect of these on the learning of their teachers and share this back with others Isteam.

- CREATE SHARED ARTEFACTS

Strategy: Create a shared artefact that all participants contribute to.

Lai et al. (2006) found that building a “knowledge repository” (p. 45) where examples of best practice could be easily accessed would support the learning of participants in online learning communities. Once gaps in knowledge are identified, the participants will collaboratively generate the material for such repositories or artefacts. As the learning community matures, participants will take collective responsibility for the artefact. By engaging in a worthwhile activity such as the shared creation of an artefact, the value of the community is endorsed.

My acts of facilitation:

- Suggested and created the Strategies Page and seeded it with a few suggestions to get it started
- Encouraged Isteam to ‘put it on the Strategies Page’ when one came up with a new barrier or strategy
- Encouraged Isteam to write notes on the page discussing how the strategies had worked
- Referred to the Strategies Page frequently in my comments on the Discussion Page and in face to face meetings
- Recognised Isteam efforts when they contributed to the Strategies Page

Isteam example:

Isteam frequently identified the barriers their teachers were having to engaging online in the early phase of the research project so we developed a shared Strategies Page where we could list the ‘excuses’ and develop strategies for addressing these. Ministry of Education (2008) says that “learners actively construct knowledge by confronting and solving problems,” and the Strategies Page was the artefact that resulted from confronting their problems. It also gave them a way of getting over the deficit thinking that was proving to be a barrier to them moving forward.

The Isteam Strategies Page began as a repository that was strongly managed by me, but as they began to develop their own strategies, Isteam took control of this page and have used it as an artefact to show the outcomes of their research. They have since reformatted this page as a handout for other ISTE who wish to use blended learning communities to support their teachers.

- BUILD COMMUNITY RELATIONSHIPS

Strategy: Create opportunities for participants to feel part of the community.

Sustaining professional learning communities relies on “purposeful and respectful relations that encourage free and open communication” (Garrison & Vaughn, 2008, p. 15). Valuing and recognising all input from participants is vital to ensuring their continued engagement and contribution. Providing achievable and engaging activities which are not able to evoke academic criticism and encouraging social chat are some ways to minimise the apprehension about contributing online. Garrison and Vaughn say that such activities also provide opportunities for collaborative conversations that allow participants to make connections with each other.

My acts of facilitation:

- Monitored the research wiki daily and commented on Isteam’s online contributions.
- Rewarded online efforts through comments (often jocular) and chocolate fish, real ones and virtual ones, which were wryly sought after. Their tangible value was irrelevant, it was being acknowledged for achieving targets and milestones publically and light-heartedly that was the important factor.
- Modelled social chat. Talked about the weekend, the earthquake, the new pup’s antics etc.

- Used informal language online. 'Typos' were part of the online genre (wikis don't have automatic spellchecking) and were accepted by all Isteam, including the ones with a literacy focus to their work.
- Used the responses to the 'name the pup' competition to help Isteam recognise the impact of such activities on their levels of engagement.
- Found examples of Isteam building social relationships in their online learning communities. Pointed these out to all Isteam to make them aware of what they were already doing and to showcase what this looked like for the others.
- Waited until Isteam were comfortable online before beginning to use Annan et al.'s (2003) 'challenging talk'.

Isteam example:

While the discussion in the face to face meetings of our Isteam blended learning community did not demonstrate the need to build relationships, the online environment strongly showed the need to implement ways of doing this. We had not recognised this was necessary until the 'name the pup' competition, but once this event had occurred and the effect was recognised, building social relationships became a major focus of the work. By using the Discussion Page results and Wikispaces statistics to investigate what had happened during this 'verbal' volley, Isteam were able to recognise how important such fun activities would be to their own online learning communities. One Isteam said she didn't realise "how much social stuff was needed at first especially when good face to face relationships already existed." This event challenged the existing schema of the whole group as Isteam had previously felt their teachers knew each other well enough for this not to be necessary. Once this was realised, the way Isteam managed their online learning communities changed.

- USE DATA AND EVIDENCE FROM THE LEARNING COMMUNITY

Strategy: Take advantage of the evidence and data that is generated from within the community to help participants make sense of their practice

Timperley et al. (2007) found that professional learning communities helped teachers to analyse the impact of their work on student learning but that they needed to use evidence to “ground teachers’ deliberations in the realities of practice” (p. 204). Through negotiating and debating meaning and testing evidence of its effectiveness, they found that participants created mutual understandings of new knowledge and achieved more effective practice. Blended environments allow facilitators to model inquiry-based learning both online and face to face and challenge participants assumptions and beliefs through helping them make sense of data. The dissonance created through such evidence-based challenge leads to shifts in practice (Timperley et al. 2007).

My acts of facilitation:

- Taught Isteam how to use Survey Monkey and how to develop worthwhile questions.
- Showed Isteam how to do a thematic analysis. Encouraged them to do this to identify patterns in how their wikis were being used at the beginning of the project.
- Fed data from my findings back to the group (all questionnaire findings were available to them via a shared Survey Monkey account).
- Showed Isteam how to use the statistics from the Wikispaces environment to identify causes of spikes in ‘views’ and ‘edits’ data. Used this source of data to challenge Isteam’s thinking.

- Asked Isteam to use the statistical data from their own wikis to identify trends and patterns. Encouraged them to share these findings in the face to face meetings.
- Encouraged Isteam to be able to use evidence whenever they fed back about the behaviour of their online learning communities.

Isteam example:

In this research project the individual teacher wikis and the teacher baseline questionnaire were the artefacts. Once data were being generated through these, Isteam shared and made sense of their findings in the face to face meetings. This opened up a pathway towards generating new collective knowledge.

Wikispaces (the wiki platform used for this research project) provides a variety of quantitative data in the form of tables and graphs that were excellent for challenging Isteam practice. These allowed Isteam to identify peaks in viewing and relate these peaks to events on the wiki. By having this level of clear and easily accessed data, it was easy to spark conversations about Isteam practice that may have been at the root of any significant events.

Timperley et al. said that collaborative planning and shared analysis of evidence were some of the catalysts for the development of new knowledge in professional learning communities, and they also included peer observations in their list of catalysts. While actual observations were not possible for Isteam as they did not work collaboratively in schools during this project, by virtually sharing evidence of their work with the whole group through the wiki, each Isteam had an insight into each other's practice. Such evidence did give Isteam a basis for comparison and critical reflection and the ability to challenge each other about how they had achieved various outcomes.

- USE CHALLENGING QUESTIONS

Strategy: Use challenging questions to encourage participants to think about the issues themselves and invite others to offer ideas.

Where online learning communities had previously fallen short was in being able to facilitate sufficient challenge to shift existing schema. Simply learning about other people's findings was not enough to shift thinking in the way Annan et al. (2003) claimed was necessary to alter practice. Garrison and Vaughn (2008) say that the facilitator needs to weave both social and cognitive presence online and face to face through using stimulating questions to move participants beyond merely exploring the issue. Without challenge, participants run the risk of reinforcing the status quo (Timperley et al., 2007).

My acts of facilitation:

- Modelled asking reflective questions in face to face meetings and writing reflective questions online. Used questions such as "so what makes you say that?" or "how do you know that?" to challenge Isteam.
- Brought Isteam's data to their attention and questioned them about its implications
- Gradually weaned Isteam of being able to get 'the answers' from me.
- Put new material up online with questions around it to show how this strategy worked.
- Kept the pressure on Isteam when there were no contributions online
- Talked about Isteam practice that I had seen and then posed questions for others to think about.

Isteam example:

In this research project, challenging questions were used strongly in the face to face meetings. Isteam shared their outcomes from their online learning communities in these face to face meetings and supported each other to understand the implications of their own practice. Initially discussions involved me simply questioning Isteam and individuals responding to me, but as time moved on the questions became more challenging, the questioning role became one we all took on, and responses were generated across the group. As one Isteam said, "it's the group cross chat, it's more important than we realise."

The cross-group questioning encouraged Isteam to think about and make changes to existing practices by making them think about what *they* were doing about their teachers' levels of engagement. Often this questioning was intense, making Isteam take ownership and responsibility for their teachers' behaviours, but it was clear from the smiles when their personal breakthroughs occurred.

Challenging questions were also used on the wiki but with an additional purpose. Often they were used to motivate and keep the focus going; however the questions were less personally challenging in this environment. This was not the place to put personal pressure on individuals. Isteam said these challenging questions were vital to ensure they continued to move forward. As one Isteam said, "they gently gave the hard word if nothing much was happening ... at times we all needed that."

The changes to Isteam practice that emerged were based on their ability to critically reflect on their shared evidence which had not been possible earlier when Isteam were just sharing personal feelings and impressions. Timperley et al. (2007) say that the most powerful shifts happen when prevailing discourses are challenged, and the combination of strategies involving using their own data and evidence with challenging questioning

appeared to be what enabled this shift to happen. As this challenge and evidence-based reflection grew, the level and intensity of pedagogical discussion also grew to finally become the dominant discourse of face to face meetings.

- PROVIDE COLLABORATIVE AND PERSONAL OPPORTUNITIES FOR LEARNING

Strategy: Use the face to face environment for collaborative learning and the online environment for personal learning.

If professional learning communities are to go beyond merely assimilating information, participants need to “collaboratively explore and reasonably question organisation and meaning of subject matter” (Garrison & Vaughn, 2008). However participants also need the flexibility and freedom to construct their own meaning and confirm understanding, and as Lai et al. (2006) found, the time to participate when they are ready. Timperley et al. (2007) said that professional learning communities where participants were supported to collaboratively process new understandings and analyse the effect were significantly more effective in changing teacher practice. They also found that the learning process itself needed to be both collective and personal if participants were to truly change.

My acts of facilitation:

- Asked Isteam to share their practice at each meeting and encouraged others to ask questions and make connections to their own work
- Facilitated the wiki to support personal reflective thinking and the face to face for generating understanding and ideas
- Developed a shared artefact that showed the collaborative efforts of Isteam
- Encouraged Isteam to practise new learning online as soon as possible

- Modelled critical reflection online
- Modelled challenge face to face
- Provided private pages on the wiki for Isteam to personally reflect as well as pages for group collaboration

Isteam example:

Isteam used two learning environments, face to face and online, which allowed me to provide for both their need to question and explore collaboratively and the need to construct personal meaning. The asynchronous online environment provided time and opportunity for personal reflection and rigour (Garrison & Vaughn) without the group's expectation of a quick response. The synergy and challenge of working collaboratively in face to face meetings generated the type of conversation necessary to unpack individual understanding and build new group knowledge.

• VARY THE PEDAGOGICAL APPROACHES

Strategy: Think about what you want to achieve and be flexible with the pedagogical approaches you use to support your learning community.

Through providing a range of activities with multiple opportunities to learn, participants have a better chance of succeeding in their professional learning (Timperley et al., 2007). This requires flexible thinking around the pedagogical approaches used for facilitating learning. The online environment will more than likely exhibit an 'exchange thinking' (Potter, 2004) approach when it is first launched. While this may go against the grain of what is considered to be good facilitation, it is during this time that knowledge is being heavily front-loaded so it is important for the facilitator to have strong pedagogical content knowledge. To 'be the expert' and provide such support speeds up the process and gets participants' levels of competence to a point whereby they can contribute confidently.

Once the building blocks are in place, the facilitator needs to provide repeated opportunities for participants to develop their own knowledge as a result of the work they have been doing. At times, Garrison and Vaughn suggest, facilitators will need to 'manage' the environment to ensure all participants are actively taking responsibility for their learning. Collaborative projects will be one strategy that will encourage group learning.

My acts of facilitation:

- Used facilitator driven top-down approaches to build technical knowledge
- Modelled different ways of facilitating online, e.g. how to use questioning strategies, and then asked Isteam to think about my approach
- Modelled critical reflection of my own practice online – exposed myself as a learner
- Changed the pedagogical approach depending on the focus. For example, technical knowledge was usually developed through expert/novice transmissive approaches, while we co-constructed our new content knowledge around blended learning communities
- Provided multiple opportunities for joint sharing of learning outcomes and building of artefacts
- Provided individual support when necessary
- Strongly managed the face to face meetings and the wiki initially and then gradually reduced the amount of direct leadership
- Provided different pages for different purposes online – some were used transmissively, others were used collaboratively.

Isteam example:

Transmission teaching coupled with participants having direct, hands on experience in a face to face environment was a necessary facilitation

strategy to build the initial knowledge base for Isteam. One Isteam commented about this phase that “we would have come to these (Web 2.0 skills) but not nearly so quickly.” Another referred to my “expert’s tool box for successful online environments” as being essential for ensuring Isteam were able to work with teachers successfully within a short space of time.

• GIVE FEEDBACK

Strategy: Value participants’ efforts by giving worthwhile feedback and feed forward as soon as possible.

Lai et al. found that feedback emerged as “key to ensuring the sustainability of the online community” (p. 31). The online environment needs to be constantly monitored and deliver immediate value to participants. This is where participants feel the least sure so any input from them must be recognised as soon as possible. Online feedback doesn’t mean just answering questions; it means showcasing participants’ efforts, engaging others in their shared stories and taking their contributions to the next level.

My acts of facilitation:

- Monitored the wiki through using the Wikispaces ‘notify me’ facility which sent emails whenever changes had been made online (all Isteam had this function turned on as well).
- Provided online feedback as soon as possible – usually the same day.
- Monitored Isteam’s teacher wikis to find examples of good practice to share with the others online as a way of recognising their efforts
- Made open suggestions about potential next steps and invited contributions from other Isteam
- All written correspondence was via the wiki. No other form of written communication was used between face to face meetings.

Isteam example:

The online environment was monitored daily and any contributions were commented on as soon as possible. Where I saw an example of something I was trying to encourage, I would highlight it and pose some questions around what may have led up to the event. Feedback was always totally positive as it is easy to misinterpret written comments. Isteam recognised that feedback was affirming and encouraging and this was “important for confidence, reassurance but also for moving us on in a variety of different ways.” Feedback online was used to suggest strategies and scaffold learning to enable them to solving problems themselves.

To conclude this section on strategies and their facilitation, I wish to reiterate that the nine strategies listed above rely on the blended nature of the professional learning community as they span both environments and effectively weave their strengths together. While each environment is part of the overall community, at different times each has specific needs that have to be catered for and strengths that can be taken advantage of. These strategies are not new in terms of facilitating learning, but their specific relevance to building effective blended learning communities needs to be considered and designed for.

The next section will outline the limitations of the way this research project was structured and the impact these may have had on the findings.

5.4 LIMITATIONS OF THE RESEARCH PROJECT

There were several limitations of the research project described here that need to be recognised. These were: the form of data that was analysed, the size of the research group, the time frame of the research project, and lastly, possible issues around being a practitioner/researcher.

Data that informed this research project were gathered through several means: audio taping and transcribing face to face meetings, written contributions to the Isteam wiki, and written comments in baseline and summative questionnaires. Written forms of data such as these may not have captured some of the practices that could have influenced outcomes in this research project. In particular, those social behaviours that are tacitly understood as building relationships such as sharing food, body language, etc., were not captured. This has been identified in the discussion about social relationship building, but as the findings from the face to face meetings show very low levels of this type of discussion while other research around professional learning communities suggests a very different scenario, this factor needs to be recognised as a potential limitation of the findings.

The nature of action research is to explore an issue or problem and develop solutions specifically related to that situation. As the data that are generated emerge from that specific problem they are not generalisable to another setting or to a wider population. This sole use of emergent data also precludes the use of data outside of the boundaries of the research project which may have provided different insights into the interpretation of the findings. The findings discussed here are specific to the group of ISTE involved in the research. This group consisted of five participants (including myself) and the size of this group must also impact on the ability to transfer the findings to different situations.

This research project spanned approximately six months and a lot of the research around the life cycles of professional learning communities suggests that this may not have been long enough to generate the levels of confidence and cohesion necessary for real critical thinking to develop. While this blended learning community did strongly show this type of talk was happening, it would have been interesting to see how far it could have developed if the timeframe had been longer. The prescribed timeframe also

meant that the third and final “transformation or disengagement” phase that Lai et al. found (2006) was imposed on the learning community rather than arriving there naturally.

As mentioned earlier, the size of this research group was small; there were four other ISTE and myself. As the researcher and also a participant in the group, it could be argued that I was in a more powerful position and this may have affected the behaviour of the other participants. In part this was addressed by having one of the other ISTE as the ‘leader’ of the group because of her role as the INSTEP co-ordinator, and all participants including myself held equal positions within the university. However, as I was the person with job-related responsibilities and therefore perceived deeper knowledge in this area, the others had looked to me as the one to lead the professional *learning*.

The following section will outline some potential implications of the findings from this research on the practice of ISTE.

5.5 IMPLICATIONS FOR INSERVICE TEACHER EDUCATORS’ PRACTICE

While this research project has worked with a small group of ISTE to support their professional learning within a blended learning community, the implications of this research can be considered by other ISTE in their work with teachers. I will use this section to describe some of the possible impacts this work could have for ISTE.

ISTE are increasingly being expected to work in wider geographical regions which impacts on their ability to provide timely face to face support for teachers. Traditionally workshops have been offered as a way of addressing this problem but these had tended to employ pedagogical approaches that are dated and recognised as not being effective in shifting practice.

Professional learning communities are becoming widely accepted as being a valuable tool in the kete of professional development and through using a blended approach these learning communities can be enhanced through the added personal reflective learning advantages that online environments can provide (Garrison & Vaughn, 2008).

The online aspect of the Isteam blended learning community has been shown here to have provided opportunities for more frequent 'contact' between Isteam and the facilitator, suggesting that ISTE could use them to sustain the professional learning they provide teachers between face to face visits. However ISTE cannot simply replace their face to face meetings with online variations of these and expect good outcomes. Nor should online learning communities be seen as just an add-on to existing professional learning communities. They need to be planned for within a holistic overview of their professional learning programmes. Without this holistic overview, the online environment quickly becomes a place for transferring information rather than for deeper learning.

ISTE need to understand the strengths and weaknesses of both online and face to face environments in order to make the best use of the synergies provided by their blended use. If they are aware of these ways of functioning and their roles in facilitating effective professional learning, then blended learning communities will be a strong tool in the professional development kete of the future.

Effective facilitation of blended learning communities for educational purposes requires a new way of thinking about our practice. A lot of time is required to support blended learning environments and the facilitator response needs to be as immediate as possible if the initial inertia is going to be successfully overcome. ISTE will need to put aside a disproportionate amount of time in the 'formation' (Lai et al., 2006) phase of the learning community's development, with the understanding that this will change as

participants find their natural rhythm and become engaged in the 'sustaining or maturation' (Lai et al., 2006) phase. There were several instances where Isteam considered their communities were 'not working' due to the lack of response from their teachers, and without their involvement in the research project, they may well have decided to discontinue at that point. Interestingly, several months later it is now their teachers they worked with who are insisting on the continued use of this model.

One of the most successful strategies that came out of this research was the use of community-sourced evidence and data to inform and challenge participants. This material was easy to source and shifted Isteam's interpretation of events significantly. ISTE are comfortable using evidence and data to show the impact of their work when milestone reporting to the Ministry of Education, but the use of community-sourced evidence and data to challenge teacher thinking and practice could be a stronger focus.

A clear message from this research project is that ISTE must upskill with regard to the use of Web 2.0 technologies. At the beginning of this research, Isteam were asked about their confidence and skill with a range of these tools and this was clearly limited. As a result of the research, they are now considerably more confident and knowledgeable and are seen as the new 'tuakana' for other 'teina' within the workplace. Without the levels of skill Isteam now possess or at least easy access to them, leading blended learning communities may not have a successful outcome. By broadening this resource base of people, the universities would be supporting the practice of a wider range of ISTE in their goal of improving teacher practice.

I will now offer some suggestions for future research leading from these outcomes that could provide worthwhile information for ISTE and the institutions they directly and indirectly work for.

5.6 SUGGESTIONS FOR FURTHER RESEARCH

In the research project described here I have worked with a group of ISTE from within one School Support Services region of New Zealand. It would be interesting to scale this project up to see how a national project that used the same blended learning communities approach could be managed. Several interactive websites are being developed by Ministry of Education at present through TKI (Te Kete Ipurangi) and these are attempting to get ISTE and teachers to share practice and build capacity, but as yet, these have not yet shown much more than what Potter (2004) describes as “exchange thinking.”

Some of the facilitation strategies described here to encourage Isteam to engage online may be applicable to a larger more widespread group although it may be that the heavy emphasis on the role of face to face meetings suggested here would need to be thought about and other strategies considered. Simulating face to face meetings online through using programmes such as Skype or using video conferencing equipment may be able to go some way towards overcoming this problem, but I suspect there will still need to be some element of face to face required.

A clear next step from this project is to continue Isteam's investigation of the use of blended learning communities to support the professional learning of teachers. Isteam developed a set of strategies to overcome barriers to teacher engagement; these could be further explored by a now more experienced Isteam using the benefit of hindsight and a new group of teachers. These strategies also need to be tested with other ISTE to see if they are able to be applied to a wider range of learning communities.

5.7 CONCLUSION

Exploring the facilitation of blended learning communities to grow the professional learning of a group of inservice teacher educators (ISTE) was the focus of this research project. As a result of this work, three professional learning discussion themes were identified: *building knowledge*, *building social relationships* and finally, *building pedagogical capability*.

Several strategies for facilitating effective blended learning communities also emerged that were necessary to ensure the progress of the ISTE's learning discussion towards building pedagogical capability where there was considerable critical reflection and engagement. In the early development phases, significant facilitation was required to build ISTE's knowledge and social relationships in both their online and face to face environments. Growing ISTE's pedagogical capability relied on having these building blocks in place first.

The first theme to emerge from the online and face to face discussions was building the ISTE's *knowledge* around research and context as well as their confidence and competency in using online collaborative technologies. Facilitation of this required the use of a range of online and face to face opportunities particularly in the early phases of this community's development. Using strategies such as 'creating shared artefacts' and 'contextualising the learning' helped to build sufficient depth of knowledge to ensure the ISTE were able to gain the most from the blended learning community.

While the face to face and online learning environments blended together, the research showed that the *social relationships* the ISTE had in the face to face meetings did not transfer into the online environment readily without conscious and active facilitation. Strategies that focussed initially on non-context related activities were used to build community relationships so participants became engaged and learned to 'talk' comfortably online.

Once the ISTE had mastered the necessary knowledge and had strengthened their online social relationships, they were challenged about their *pedagogical* practice. Facilitation strategies that involved using 'data and evidence from the learning community' and 'challenging questions' encouraged participants to develop their pedagogical thinking. One of the ISTE said such challenge was "vital to ensure we reflected on our practice, met challenges head on and continued to move forward." The strategy of providing 'collective and personal opportunities for learning' through the blended approach was important as the knowledge and social relationships they had already built helped to support them to critically reflect on their professional learning and practice issues.

Face to face meetings afforded more opportunities for building ISTE's collective learning while the online environment supported the personal reflection necessary to build confidence and capability. By blending the inherent strengths of the face to face and online environments and by providing ways to overcome each environment's potential weaknesses, this group of ISTE benefitted from a learning community that was both reflective and collaborative. In line with Garrison & Vaughn's (2008) thinking, this blended approach led to a measureable shift in both process and outcome.

The outcomes of this research project indicate that the synergies created through combining face to face and online professional learning communities outweigh the potential offered by either environment on its own. This group of ISTE have significantly shifted their beliefs and practices with regard to the use of blended learning communities in their work.

As a result of this research, blended learning communities have piqued the interest of other inservice teacher educators at Massey who recognise their potential for embracing and addressing the demands of working in the 21st century.

APPENDIX ONE: GLOSSARY

Several terms are used in this thesis that I will define here in order to establish my perspective on their meanings.

Blended learning	The thoughtful integration of ... face to face learning experiences with online learning experiences (Garrison & Kanuka, 2004, p. 96).
Blog	A 'blog' (a contraction of the term 'weblog') is a type of website, where the author "initiates a posting and all related comments are associated with the original posting. Blogs are therefore most useful when an author seeks to state an opinion and then asks readers to respond to this opinion, but not change the original posting" (Mindel & Verma, 2006, p. 21).
Facilitator	Person who manages the learning environment to encourage participant learning.
Inquiry learning	A practical, question or problem driven approach to learning that enables students to experience the processes of creating their own knowledge.
Inservice teacher educator	'Inservice teacher educator' (ISTE) is a recently adopted term used to describe people who work in schools to support teachers to improve their practice. Previously 'Adviser' was the term commonly used, but as a result of the INSTEP project this term has changed partly to distinguish advisers from other people who also provide support in schools. I have used the acronym ISTE in this thesis.
ISTE	Collective acronym for Inservice teacher educators.
INSTEP	'Inservice Teacher Educator Practice project'. This project

Project	was launched in 2005 and was established to explore effective approaches for professional learning of inservice teacher educators, aiming to strengthen and promote evidence-based practice. It is one of the few projects internationally that is focusing on the pedagogy of inservice teacher educators.
Isteam	Collective acronym for 'Inservice teacher educators at Massey'. This was the name the research group gave itself.
Lurkers	People who "read messages on an Internet discussion forum (as a newsgroup or chat room) without contributing." (http://mw1.merriam-webster.com/dictionary)
Situated learning theory	A learning theory where the focus is on the "relationship between learning and the social situations in which it occurs" (Lave & Wenger, 1991, p. 12).
Social networking	A social network service focuses on building online communities of people who share interests and/or activities, or who are interested in exploring the interests and activities of others. Most social network services are web based and provide a variety of ways for users to interact, such as e-mail and instant messaging services. (http://en.wikipedia.org/wiki/Social_network_service)
Social software	"Software that supports group interaction" (Shirky, 2003) "Current Web 2.0-based social software tools like blogs, Facebook , YouTube , and Flickr not only support social interaction, feedback, conversation, and networking but also incorporate a flexibility and modularity that enables 'collaborative remixability', a transformative process in which the information and media organized and shared by individuals can be recombined and built upon to create new forms, concepts, and ideas" (Boyd, 2007; Downes, 2005)

Tuakana-teina	A Maori term. It generally means the caring relationship between the 'tuakana' or older sibling, and the 'teina' or younger sibling. As the younger one grows, they become 'tuakana' for the next sibling. The term usually refers to people within one generation.
Web 2.0	The term " Web 2.0 " builds on the Web 1.0 'read only' way of using the web and refers to a second generation of web development and design that aims to facilitate communication, secure information sharing, interoperability, and collaboration on the World Wide Web. (http://en.wikipedia.org/wiki/Web_2.0).
Wiki	A Wiki can be thought of as a combination of a Web site and a Word document. At its simplest, it can be read just like any other web site, with no access privileges necessary, but its real power lies in the fact that groups can collaboratively work on the content of the site using nothing but a standard web browser (Mindel & Verma, 2006).

APPENDIX TWO: BASELINE QUESTIONNAIRE

Appendix Two: ISTEAM Baseline Questionnaire	
1. Professional Learning Communities	
This section relates to your understanding of professional learning communities	
1. Please explain what you understand by the term Professional Learning Community (PLC)	<input type="text"/>
	<input type="text"/>
2. What are the key features of a PLC?	<input type="text"/>
	<input type="text"/>
3. What types of face to face PLCs are you offering to teachers as part of your advisory work?	<input type="text"/>
	<input type="text"/>
4. What do you currently do to encourage teachers to engage in your PLCs?	<input type="text"/>
	<input type="text"/>
2. Online Learning Communities	
This section is about ONLINE professional learning communities	
5. Please explain what you understand by the term ONLINE Professional Learning Community	<input type="text"/>
	<input type="text"/>
6. What (if any) ONLINE PLCs are you offering to teachers as part of your advisory work?	<input type="text"/>
	<input type="text"/>

Appendix Two: ISTEAM Baseline Questionnaire

7. Based on past experience, what do you think your teachers are going to need to engage in an online PLC?

8. How do you imagine using online PLCs will benefit the way you work?

9. Do you imagine there could be any issues for you when using online learning communities?

- Yes
 No

10. If you answered yes to the previous question, please discuss what potential issues these could be

3. Technical Confidence

This section is about your level of confidence and competence with using Online environments

11. How would you rate your confidence in using the following online environments?

	none	low	some	good	confident	independent
Blogs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Breeze	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Illuminate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skype	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wikis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please comment

Appendix Two: ISTEAM Baseline Questionnaire

12. How would you rank yourself in the following aspects of using wikis?

	watching	climbing	walking	running
retrieving lost material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
setting up wikis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
posting documents etc	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
adding new pages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
making links	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
inviting people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. How would you rank yourself in the following aspects of using Skype?

	watching	climbing	walking	running
adding contacts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
fixing technical issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
installing a new camera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
manipulating video	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
running conferences	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. ISTE Support

This section relates to your professional development needs to enable you to become more confident and competent users of online learning environments

14. How have you previously used me in my role as an e-learning adviser to help you in your work?

	never	1-2 times a year	several times a year	monthly	weekly
technical support (fixing problems)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
learning how to use new programmes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
finding the best programme for a particular purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
supporting me in my work with teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
planning my work with teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>				

15. Please outline how you think I might be able to support you this year

APPENDIX THREE: SUMMATIVE QUESTIONNAIRE

Appendix three: Summative ISTEAM Questionnaire

1. Professional Learning Communities

This section relates to your understanding of professional learning communities

1. Please explain what you now understand by the term Professional Learning Community (PLC)

2. Blended Learning Communities

This section is about BLENDED learning communities

2. Please explain what you understand by the term Blended Learning Community

3. Based on your experience this year, what do you now think your teachers need to engage effectively in a blended PLC?

4. Based on this year's work, how do you think using blended PLCs will benefit the way you work?

5. Based on this year's work, how have your teachers benefited from being members of blended learning communities?

Appendix three: Summative ISTEAM Questionnaire

6. What issues did you have when using blended learning environments?

3. Technical Confidence

This section is about your level of confidence and competence with using Online environments:

7. How would you rate your confidence in teaching others to use the wikispaces online environment?

	none	low	some	good	confident	independent
Wikis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Please Comment						

8. How would you rank yourself in the following aspects of using wikis?

	watching	drawing	walking	running
retrieving lost material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
setting up wikis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
posting documents etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
adding new pages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
making links	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
inviting people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. ISTE Support

This section relates to the support you have been offered this year and the impact it has had on your practice

Appendix three: Summative ISTEAM Questionnaire

9. How have you used me this year to help you in your work?

	never	1-2 times a year	several times a year	monthly	weekly
technical support (fixing problems)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
learning how to use new programmes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
finding the best programme for a particular purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
supporting me in my work with teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
planning my work with teachers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
learning how to develop data tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
learning how to analyse and use data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)					

10. Please indicate the relative importance of the support you have received this year from me

	not important	important	very important	vital	N/A
one to one	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
in school support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
demonstrations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
modelling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
questioning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
wiki feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
technical help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
motivation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
developing strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
data generation/application	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other					

Appendix three: Summative ISTEAM Questionnaire

11. please identify the impact on your work of the different types of support I provided this year

one to one

in school support

demonstrations

questioning

meetings

wiki feedback

technical help

motivation

developing strategies

generating and analyzing

data

other

12. Please comment on what you most gained as a result of the work we've done this year.

APPENDIX FOUR: ETHICS CONSENT

INSTEP Research and Development Project – Strengthening Inservice
Teacher Education

PARTICIPANT CONSENT FORM FOR INSERVICE TEACHER EDUCATORS

This consent form will be held for a period of five (5) years

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being audio taped.

I agree/do not agree to the interview being video taped.

I wish/do not wish to have my tapes returned to me.

I wish/do not wish to have data placed in an official archive.

I agree to not disclose anything discussed in the Focus Group.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: _____ **Date:** _____

Full Name: _____

Please print your name

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