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*A Qualitative Examination of Conferencing Between Cooperating Teachers and
Student Teachers in a Secondary School Setting*

By

Corinne D. MacMillan

A Thesis

Submitted to the Faculty of Graduate Studies

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF EDUCATION

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**A QUALITATIVE EXAMINATION OF CONFERENCING BETWEEN
COOPERATING TEACHERS AND STUDENT TEACHERS IN A
SECONDARY SCHOOL SETTING**

BY

CORINNE D. MACMILLAN

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University
of Manitoba in partial fulfillment of the requirements of the degree
of
MASTER OF EDUCATION**

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Date April 17, 1998

Dedicated to my husband, Brian, and to Opa.

This project would not have been possible without their unconditional love and support and unwavering faith in me.

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“Is there anyone so wise as to learn by the experience of others?”

-Voltaire

Abstract

Despite the fact that the student teaching practicum is consistently reported as the most important part of an Education student's overall experience, little research is available to guide cooperating teachers. At the heart of this work is the conferencing that takes place between the cooperating teachers and student teachers. The present study, framed in a cognitive apprenticeship model, explores the conferencing experiences of six cooperating teacher/student teacher pairs. Using data from audio-taped conferences, reflective statements from the cooperating teachers and student teachers on each conference and focus group discussions, this research demonstrates the utility of the cognitive apprenticeship framework in understanding and structuring the student teaching experience.

The results of this research demonstrate that the global elements of the cognitive apprenticeship framework are reflected in the conferencing experiences of cooperating teacher/student teacher pairs. Emergent factors ranged from the individuals' perceived benefit of actively preparing to conference with each other to changes required in the structure and content of university coursework to enhance preservice teacher preparation. The cognitive apprenticeship model's four global elements—content, method, sequencing and sociology—and the corresponding specific categories within each global element were evidenced across data sets regardless of grade, course or subject. The results of this investigation demonstrate that the

cognitive apprenticeship model is an effective tool for understanding the learning that takes place in conferencing between cooperating teacher/student teacher pairs.

INTRODUCTION

Twenty-two years have passed since Fuller and Brown (1975) stated that, when learning to teach, students feel stimulated, apprehensive, exposed, endangered, confused, discouraged, touched, proud, and lost. According to Furlong and Maynard (1995), nothing much has changed. "Learning to teach was still a complex, challenging and often painful experience" (p. 68) where progress was anything but linear. Progress towards becoming an expert teacher is "complex, erratic and in one sense unique to them [student teachers] as individuals" (p.70). If students are to make sense of teaching and develop their own body of practical professional knowledge, then, according to Copeland (1981), it is vital that they learn to 'see' classrooms in conceptual terms. Schon (1983; 1987) suggests that these concepts allow students to 'frame' what is happening around students and to interpret the significance or insignificance of events and behaviours. This conceptual framing, coupled with assistance in reducing the complex nature of learning to make the necessary decisions an expert teacher must make on a moment to moment basis, will help them gain control over their own practice. To complicate matters, this conceptual framing is influenced by the context of a particular classroom. Hollingsworth's (1989) investigation of changes in pre-service teachers' knowledge and beliefs explored the types of influence that affected student teachers' growth and development. In her category termed 'contextual factors', she found that the content of students' learning was clearly influenced in a variety of ways by the overt and covert culture of the school and classrooms in which they were. Learning to teach is, indeed, a complex process.

At the heart of these observations is the fact that wisdom, and not mere knowledge, is the basis of professional experience. The ability of expert practitioners to apply knowledge wisely arises, in part, from the study of theory, but also requires reflective participation in activities of a particular community of practitioners. In their professional activities, communities of practitioners are connected by intricate, socially constructed webs of beliefs, which are essential to professional practice. Consequently, the development and use of wisdom is framed not only by the knowledge and experience accumulated in a domain, but also by the way members of that community view the world. Professional practice is difficult to understand unless viewed from within the web of beliefs that constitute the community culture (Geertz, 1983). Not surprisingly, preparing new members to join a practice community is a complex task. Professional wisdom requires a broad knowledge base that includes not only 'what', but 'how to', 'under what circumstances' and a belief system that guides the application of this knowledge. Consequently, learning methods embedded in a range of authentic situations are essential to developing professional wisdom. Knowledge and experience within a culture ground the situation in which the experience takes place and embed learning in context, thereby providing structure and meaning. Learning in a community of practitioners is a process of enculturation (Brown, Collins & Duguid, 1989).

This broad conceptualization of how professional knowledge is developed is consistent with cognitive research, which over the last decade, has expanded the

understanding of learning as “a complex and personal process through which human beings actively build knowledge from actions, experiences and interactions with the world”(Herrmann, Cook, Elliott, Lewis, & Thomas, 1996, p. 253). This view stands in sharp contrast to traditional views of learning which have advocated passive assimilation of information, exemplified by drill and practice routines. The current understanding of human learning supports methods of inquiry-oriented instruction which encourage active learning through building on prior experience, engaging with subject matter content, and real-world application of new knowledge. In the case of teacher education, this approach “...encourages teachers to examine and challenge their own conceptions and beliefs...” (Herrmann et al., 1996, p. 254). This critical examination of beliefs will lead both student teachers and teacher educators to view themselves as learners in their own teaching contexts (Russell & Korthagen, 1995). Using this approach to develop ways to examine and enhance teacher education will help student teachers, cooperating teachers and professors to become equal stakeholders in the learning process.

It is important to explore the phenomenon of learning to teach, especially from an experienced teacher’s point of view, because it is these teachers who provide student teachers with access to the community of teaching practice. Too often it is assumed that good teachers automatically make good cooperating teachers (Clarke, 1995). Clarke (1995) suggests that “even with the best intentions, this assumption is seriously flawed” and that the “transition from teacher to cooperating teacher is anything but automatic” (p. 1). Given the fact that student teachers consistently cite

their student teaching experience as the most valuable aspect of their education (Guyton, 1989; Clarke 1995), it is “incumbent upon the teaching profession to ensure that cooperating teachers are provided with every opportunity to critically evaluate the ways in which they interact with student teachers” (Clarke, 1995, p.2) and to find ways to become better prepared for the supervisory nature of their role as cooperating teachers. The perceived importance of the cooperating teacher role stands in contrast to the efforts made to prepare teachers for this role. Though Griffin (1989) found that the deep-seated personal beliefs and characteristics of all participants remained unchanged over the course of student teaching, and that participants and procedures were more alike than different across settings, “supervision was dominated by the cooperating teachers, who focused on procedural knowledge” (p. 349). Griffin also found that there was no knowledge base to guide participants’ interaction; teachers and professors seldom articulated common policies or beliefs. Moreover, each triad of cooperating teacher, student teacher, and faculty advisor functioned in isolation, and classroom experiences were rarely related to university course work. The apparent lack of communication between the teacher education institutions and the schools in which the student teaching takes place needs to be amended such that there is a clear, shared vision in creating a supportive learning environment through which joint decisions are made on an ongoing basis about the professional learning experiences of the participants (Herrmann et al., 1996; Kagan, 1992; Senge, 1990).

A number of studies have demonstrated that cooperating teachers are poorly prepared to assume the duties and responsibilities related to their supervisory role (Clarke, 1995; Guyton, 1989; Painter & Brown, 1979). Guyton (1989) has suggested that “the cooperating teacher has great influence on the student teacher during the experience” (p. 54) but that the “role of the cooperating teacher is poorly defined and that teachers generally are unprepared for the task of student teacher supervision” (p. 54). Cooperating teachers are selected most often by their willingness to work with the preservice teachers. However, the supervision of developing professionals is a complex task different from teaching and “even the best teacher may not be a good cooperating teacher” (Guyton, 1989, p. 55).

Classroom teachers support the notion of special training for cooperating teachers with a variety of incentives providing the motivation. Key incentives appear to be acknowledgment of the uniqueness of the role of a cooperating teacher and feeling pride within that role (Guyton, 1989). If preservice teacher education programs are to include professional growth opportunities, then program designers must consider and expand their visions to include a definition of the role of the cooperating teacher, an acknowledgment of the unique and complex nature of the supervision, and the delivery of quality supervision by a cooperating teacher to insure effective practice and meaningful learning opportunities for student teachers. The press for preparation for the cooperating teacher role is not limited to the major student teaching experience. Kagan (1991) suggests that

there is an interesting issue almost completely ignored in the literature on preservice teacher education and supervision...and the ignored issue is the nature of supervision during early clinical experiences of preservice teacher education and how it should differ from the supervision associated with late clinical experiences, including student teaching (p. 10).

Kagan (1992) also suggests that, whether the classroom experience is completed as a practicum, internship or student teaching, the experience is affected by many school and classroom variables: “the nature of the pupils, principals’ beliefs, parental attitudes, availability of materials, communication between school and university personnel and attitudes of teachers in a school “ (p. 150). But, according to Kagan (1992), the single greatest influence on the student teacher during the classroom experience is the relationship between a novice and his/her cooperating teacher. Because each student teacher must learn to negotiate many social and political (as well as pedagogical) dilemmas, and given that the single greatest influence on the successful development of learning to become a professional teacher is the cooperating teacher, the paucity of literature on the role of the cooperating teacher provides evidence that much work needs to be done to identify the salient features that constitute effective supervision of student teachers. Based on the sparse research available, classroom practica “appear to be structured idiosyncratically” (Kagan, 1992, p. 150) and one finds “no systematic efforts to encourage novices to make their personal beliefs and images explicit to study pupils, to compare ongoing experiences with pre-existing images, to construct standardized routines or to reconstruct the image of self as teacher” (Kagan, 1992, p. 150). Kagan (1992) continues with the inference that student teaching is used primarily to acquire procedural knowledge,

since this particular kind of wisdom is not provided during the more abstract and theoretical university course work that frequently precedes the practicum. Even where it does occur, the focus on procedural knowledge is too narrow, given the highly situated and context dependent nature of professional practice, including the student teaching experience.

At the heart of the student teaching experience is the conferencing which exists quite naturally between the student teacher and cooperating teacher. Conferencing can be characterized as any conversation that takes place between the cooperating teacher and student teacher that might include a discussion about classroom procedures, teaching methodology, learning strategies, and/or the decisions made by the cooperating teacher and/or student teacher under a variety of conditions. These conditions may involve management issues, such as time, whether personal organizational items are being discussed or time on task of a particular aspect of a lesson which was just taught. Typically, conferencing is a focused dialogue between the expert and novice, designed to provide the novice with a greater understanding of expert practice with greater access to the knowledge required to become an expert. Conferencing provides rich opportunities to develop the knowledge, experiences and beliefs essential to competent practice.

If student teaching is viewed as the most valuable aspect of the teacher education experience, if the cooperating teacher is seen as the most influential component of gaining the wisdom required to become a practitioner in the culture, and, if the

nature of the discourse among and by the experts in that culture is seen as highly influential on the learning that occurs in that culture, then it is expected that an exploration of the interactions that take place in the conferencing context between cooperating teachers and student teachers will provide valuable insights into effective conferencing behaviours. A transparent description of conferencing behaviours will contribute to the professional development of both cooperating teachers and student teachers. Teachers who understand their own belief structure become less dependent on the existing structure of the school environment. Practicing new ways of knowing in a direct and focused way ensures that we learn from our own thoughtfulness. It is the school culture which determines and is determined by the practice of the professionals within it. Reflection on and articulation of the processes which affect the development of that culture are necessary to enhance learning and improve practice. The verbal reflection and articulation of elements within the complex culture of teaching, require directed supervision on the part of the cooperating teacher. Guided conferencing with the student teacher will assist the student teacher in developing an understanding of the rationale for action, provide consistency in that action, and support student teacher development toward becoming a competent professional. The present research will examine the conferencing episodes of cooperating teacher/student teacher pairs to provide evidence on which to base guidelines for effective conferencing practices.

In the chapters that follow, the conferencing between cooperating teachers and student teachers is situated in the context of the cognitive apprenticeship framework

(Collins, Brown & Newman, 1989). A methodology designed to assess conferencing behaviours in the context of the cognitive apprenticeship framework is described in Chapter 3, and the results generated following the methodology are presented in Chapter 4. The discussion in Chapter 5 focuses on patterns observed across the results and concludes with recommendations for conferencing practices.

CHAPTER 2: FOCUSED LITERATURE REVIEW

Learning to teach in the context of a community of practice is a complex process. Explication of the tacit knowledge which expert teachers possess about the nature of teaching is also complex, since not all expert classroom teachers are expert student teacher supervisors (Clarke, 1995; Kagan and Warren, 1991). One of the key elements which ties the following literature review together is the element of communication - the dialogue that must exist between expert and novice for learning to take place. The most common communication strategy that exists between cooperating teacher and student teacher is the regular conferencing that takes place as teaching plans are made, implemented and evaluated (Guyton, 1989; Kagan and Warren, 1991). Conferencing strategies will be examined in relationship to the Collins et al. (1989) cognitive apprenticeship framework. Therefore, the literature review begins with an examination of the concept of apprenticeship, and continues with a comparison of traditional apprenticeship to cognitive apprenticeship. Based on existing research on learning to teach, the nature of expert teaching knowledge is then discussed to set the stage for applying the cognitive apprenticeship framework to the development of teaching expertise in student teachers. Finally, the research questions which emerged from this review are articulated. The purpose of this review is not only to describe the elements of the conceptual framework upon which this research is based and to provide a perspective for understanding the analysis of the data, but also to serve as a conceptual guide for future practice in the supervision of student teachers.

THE NATURE OF APPRENTICESHIP

The overarching framework for the present study is provided by the concept of apprenticeship. Apprenticeship emphasizes that activity and learning are inseparable. In traditional apprenticeship activities, learning is context-dependent, situated and enculturated. Apprenticeship has also been described as situated learning which involves modeling or coaching to promote learning by making tacit knowledge explicit, providing strategies for new learning to occur, and eventually empowering the apprentice to complete tasks independently (Brown, Collins and Duguid, 1989). Traditional apprenticeship focuses closely on specific methods for carrying out tasks in a domain - to learn through a combination of methods such as observation, coaching and practice. Some educational practitioners would refer to these methods as modeling, coaching or scaffolding, and fading (Collins et al., 1989). In apprenticeship, there is a continual interplay between observation, scaffolding and increasingly independent practice. This interplay aids the development of self-monitoring skills and conceptual knowledge necessary to competent practice. In this interplay, observation is the key to development of a conceptual model for a task. Observation of a target task provides an advance organizer of the skill(s) to be learned and allows the apprentice to concentrate on the execution of the task. Observation also provides the learner with an interpretive structure for making sense of feedback from the 'teacher', provides an internalized guide for independent practice, and allows for continual updating of the conceptual model through further observation and feedback.

Observation of highly cognitive activities, such as teaching, can be a challenging task, since the expert processes required to solve complex teaching problems require active integration of technical, affective and conceptual knowledge, and this integration is frequently guided by tacit knowledge. Students are best able to access this tacit knowledge only through role models who explicitly define and describe the process of gaining, and eventually applying, the tacit knowledge. To learn effectively from role models, there must be a recognition first, of the nature of expert practice and second, of a process of learning to achieve expert practice. During the learning process, it is important to embed the characteristics of learning in the culture in which the target skills are practiced. Learning through enculturation provides the apprentice with continual access to a variety of models and thus the apprentice may learn multiple ways to carry out a task. Multiple models also allow for the recognition that no one expert has all the answers. Through the modeling process, apprentices also have the opportunity to view themselves, other learners, and expert teachers as they participate in complex tasks. At its best, this learning process is incremental and situationally dependent (Brown et al., 1989) and allows novice practitioners to use their experience in the practice community to achieve a step-wise progression towards competent practice.

COGNITIVE APPRENTICESHIP

The nature of expert teaching practice is that cognitive and metacognitive strategies and processes, such as decision-making, self-monitoring and problem-solving skills, are the tools through which various abstract concepts, facts, technical skills and affective elements are manipulated. Cognitive strategies, such as the skills related to understanding the content of the curriculum, allow a teacher to manipulate concepts within the unit or ideas within the lesson so that the students can learn the intended outcomes. Metacognitive strategies, or the ability to think about one's thinking, include the skills which allow a teacher to recognize when the students do not understand a concept. Cognitive and metacognitive strategies are the organizing principles of expertise which allow the teacher to draw on his or her wisdom to make decisions about how to proceed. Expert practice rests on the effective integration of these processes. Strategies for establishing this integration require sequences of experiences that gradually approximate mature practice, such as those typified in the methods of traditional apprenticeship. However, largely because of the cognitive nature of the teaching task, the term 'cognitive apprenticeship' approximates the processes for enculturating the novice teacher more closely than does a model for traditional apprenticeship.

The term 'cognitive' emphasizes that the apprenticeship reaches beyond the somewhat obvious physical skills - that there is a certain intellectual capacity and specialized knowledge required beyond that of what traditional apprenticeship learning entails (Brown et al., 1989). Traditional apprenticeship teaches skills where

processes are external and readily available to the involved parties for observation, comment, refinement and correction. These processes are transparent both from the end products, and as from the steps in producing these products. This transparency allows the learner to internalize the processes of self-diagnosis and correction. In contrast, teaching cognitive skills through an apprenticeship model requires that the internal thought processes of the expert are first made external. Cognitive apprenticeship requires that covert self-correction and monitoring skills be taught explicitly. To develop these complex cognitive skills, we cannot rely on the transparency which characterizes traditional apprenticeship. Like traditional apprenticeship, cognitive apprenticeship promotes learning within a nexus of activity, tools, and the culture for which it is appropriate. Learning occurs through collaborative social interaction. Through the social construction of knowledge, ideas are modified and exchanged within the culture; and belief systems are developed and appropriated through conversation and the narrative of participants (Schoenfeld, 1985; Lampert, 1986). This transparency is particularly important for those who are just entering the culture, so they may get a sense of the application of expertise.

In the school context, social interaction plays several key roles. It provides for the synergistic effect of collective problem solving. The novice is provided with the benefit of reflection and narration within a task by observing multiple roles and perspectives within a group. Collaborative learning provides a mechanism for confronting ineffective strategies and misconceptions and for learning to work

effectively with a group, as is often the nature of teaching (Resnick, 1988; Brown et al., 1989). Capitalizing on social interaction, cognitive apprenticeship also encourages reflection on the differences between the expert and novice by practising role alternation between expert and novice efforts through abstracted replay. Abstracted replay is a process of recording the novice's thoughts and comparing his or her performance to that of the expert by highlighting the determining features of both performances. The comparison is followed by an analysis of the insight required to perform complex cognitive tasks such as discussing with a Senior 4 English Literature class the behaviour of a main character in a novel relative to the theme of the entire text. The complex cognitive tasks typical of teaching require that responses to any situation be first generated and then evaluated for their effectiveness. Cognitive apprenticeship involves the development and externalization of student teacher-cooperating teacher dialogue about the generation and evaluation of teacher thinking in a way that students can internalize gradually. Development and externalization of the processes can be accomplished through discussion, role reversal and group problem solving. In a cognitive apprenticeship structure, tasks are chosen to illustrate the power of learning by applying techniques in successively more diverse and complex situations. Throughout this process, benchmarks and incentives are devised to reflect the culture in which the knowledge of teaching is applied. Finally, as learning continues, there is an emphasis on decontextualizing knowledge that can be used in different settings so that knowledge application can be explicitly articulated in different contexts (Collins et al., 1989).

The cognitive apprenticeship model (Collins, et al., 1989) provides well articulated processes for learning in a practice community. The processes include: modeling (the expert demonstrates the strategies and methods linked with expert practice while the novice observes); coaching (the expert makes suggestions and guides the novice through simple tasks); scaffolding (the expert helps the novice to bridge previously learned strategies with new strategies being taught); articulation (the expert provides opportunities for the novice to explicate the learned 'thinking like a teacher' skills); reflection (the expert engages the novice in dialogue and activities which create opportunities for the novice to anticipate scenarios where knowledge gained during the practicum could possibly be applied, and the expert helps the student to recognize the synergistic relationship between the act of teaching and reflective preparation to teach); and exploration (the expert provides the novice with a setting in which the learned skills can be examined and practiced) . It should be noted that these processes are neither linear nor are they hierarchical. These processes are accessed by the expert and novice as the need arises while the expert demonstrates, discusses, and guides the novice toward developing his or her own set of tools to continually gain knowledge and experience.

While examining the intricate process of gaining knowledge and experience in a teaching community, Kagan and Warren (1991) discovered that a reasonably seasoned cooperating teacher illustrated the 'instinctual' application of the cognitive apprenticeship methods. The cooperating teacher's application of modeling, coaching, scaffolding, articulation,

reflection, and exploration was a very successful strategy for supporting the learning of preservice teachers who are at varying stages of learning readiness in their preservice experiences. Kagan and Warren (1991) concluded that the “continuum of differential supervision [applied by the observed expert] was consistent with one of the newest and most topical modes of learning: the notion of cognitive apprenticeship” (p. 11).

Regardless of the level of experience of the student teacher, however, communication is essential to the learning process in an apprenticeship model. In the student teacher’s learning context, as within any culture, ideas are exchanged and modified, and belief systems are developed and appropriated through conversation and narratives. It is critical to the learning process that these conversations are promoted, not inhibited. “They are essential components of social interaction and thus, of learning. They provide access to much of the distributed knowledge and elaborate support of the social matrix” (Brown et al., 1989, p. 40). Learning environments must allow narratives to circulate and “war stories to be added to the collective wisdom of the community” (Brown et al., 1989, p. 40). Despite their widespread use in practice, the role of narratives and conversations is more complex than most realize. Important discourse in learning is not always direct and declarative. People who are on the periphery of a community or who are just entering the culture learn a great deal from their position on the periphery. Those just entering the culture need to “observe how practitioners at various levels behave and talk to get a sense of how expertise is manifest in conversation and other

activities” (Brown et al.,1989, p.40). At the entry stage, the cooperating teacher’s primary use of his or her wisdom is to use authentic teaching activities as a major teaching tool. One of the most challenging aspects of this kind of teaching is to determine what will be presented as explicit knowledge and what is to be left as implicit. A failure to make conscious choices about what kinds of knowledge are to be made explicit through modelling or direct or indirect discourse results in an “inadequate epistemology” (Brown et al.,1989, p. 41).

THE NATURE OF TEACHING EXPERTISE AND COGNITIVE APPRENTICESHIP

Many student teaching practices assume that conceptual knowledge of practice will be abstracted from the situations in which it is learned and used. Brown, et al., (1989) argue that when learning is viewed as cognitive apprenticeship, “knowledge is situated, being in part a product of the activity, context, and culture in which it is developed and used.” (p. 32) In their discussion of how the cognitive apprenticeship perspective affects our understanding of learning, they note that conventional schooling too often ignores the influence of school culture on what is learned in school. Though there are many innovative teachers, schools, and programs that act otherwise, “prevalent school practices assume, more often than not, that knowledge is individual and self-structured, that schools are neutral with respect to what is learned, that concepts are abstract, relatively fixed, and unaffected by the activity through which they are acquired and used” (Brown et al., 1989, p. 37). Their argument is based on the teaching of reading, writing and mathematics, as

illustrated by Schoenfeld's (1983) method (1985) for teaching problem solving to college students, Palincsar and Brown's (1984) method of 'reciprocal teaching' of reading comprehension skills, and Scardamalia and Bereiter's (1985) 'procedural facilitation' of writing skills to secondary students. Though the specific methods used vary with the age level of the students, the underlying principles are the same. Central to the methodology are activity in learning and the inherent context-dependent, or situated, nature of learning. Apprenticeship also suggests the paradigm of modeling, coaching and fading (Collins et al., 1989) whereby teachers or coaches promote learning, first by "making explicit their tacit knowledge or by modeling their strategies for students in authentic activity. Then teachers and colleagues support students' attempts at doing the task. And finally, they empower the students to continue independently" (Brown et al., 1989, p. 39). To foster critical and independent thought within the student, regardless of age level or subject matter, the illustrations for teaching reading, writing, and mathematics suggest that a contextually dependent procedure supports the development of higher level cognitive skills.

Collins et al. (1989) suggest that of all of the differences between formal schooling and apprenticeship methods, two are most important - skills and knowledge have become abstracted from their uses in the world. Apprenticeship embeds the learning of skills and knowledge in their social and functional context. "This difference is not academic; it has serious implications for the nature of the knowledge that students acquire" (Collins et al., 1989, p. 454). Standard pedagogical practices in teacher

education render key aspects of expertise invisible to student teachers. This invisibility is due, in part, to the fact that too little attention is paid to the processes that experts engage in to use or acquire knowledge in carrying out complex or realistic tasks. In an attempt to make expertise more visible, Sternberg and Horvath (1995) suggest a prototype view of what constitutes expert teaching. The prototype is arranged around three clusters of expert-novice differences: domain knowledge, efficiency and insight. The three expert knowledge clusters in the prototype are listed in Table 1 and are described below.

Table 1

The Expert Knowledge Clusters from Sternberg and Horvath's (1995) Prototype

<i>DOMAIN KNOWLEDGE</i>	<i>EFFICIENCY</i>	<i>INSIGHT</i>
1. Content	1. Automatization	1. Selective Encoding
2. Pedagogical	2. Executive Control	2. Selective Combination
-content specific	- planning	3. Selective Comparison
-content non-specific	- monitoring	
3. Practical	- evaluating	

Sternberg and Horvath (1995) characterize domain knowledge in terms of three specific types of knowledge: content, pedagogical, and practical knowledge. Content knowledge is the knowledge of the underlying principles of a subject. For example, the general function of a resistor in an electrical circuit is a fundamental piece of content knowledge related to the electronics curriculum. Pedagogical knowledge

can include a content-specific application of teaching methods, such as demonstrating the use of test equipment used to troubleshoot a problem circuit. Pedagogical knowledge can also include content non-specific methods employed by the teacher. For example, to establish and maintain classroom routines, the teacher may simply close the classroom door and say a general 'Good Morning' to the class. If repeated consistently, the actions of closing the door and delivering the salutation will become a signal that class is about to begin and that students should stop talking and wait for further instructions. Practical knowledge in a domain can include explicit knowledge of how to teach specific aspects of the content: the often tacit knowledge that is the 'hidden' basis for intelligent action. To continue with the electronics example, using test equipment correctly to troubleshoot a malfunctioning circuit requires that students spend time learning about the individual testing features of a particular piece of equipment by working on simple practical problems with the equipment before jumping into complex circuit analysis. Expert teacher modeling of the testing sequence, such as talking aloud about why he/she is testing one component before another, may constitute explication of some of this tacit expert knowledge. The second cluster of expert - novice differences focuses on efficiency.

In the Sternberg and Horvath (1995) model, efficiency is characterized by three elements which lead the practitioner towards reflective practice and the ability to solve problems efficiently. The first two elements of the efficiency cluster, automatization and executive control, allow the practitioner to do more work in less

time because the thinking skills for anticipating difficulties in executing a lesson, monitoring (detecting student problems during a lesson), and evaluating (changes to the lesson during or after performing the task) become rote. However, executive control involves planning to accommodate student needs, which are skills that build onto themselves over time. For example, during the demonstration of working with the test equipment, class control may wane. An expert teacher would plan for involving certain students in the demonstration to help keep them focused on the task to be learned. If it appears that some students are perplexed by the demonstration, the expert teacher would cue into the facial features and body language being exhibited by the confused students. After evaluating why certain students may be perplexed, (perhaps by simply asking direct questions of members of the group while performing the demonstration), it may be necessary for the expert teacher to stop the demonstration and review with the students some previous material to support greater understanding of the current principles, even though the teacher expected to complete the demonstration of the testing procedure in a given class. The example given here illustrates only one possible scenario of executive control. There are many others, and all are dependent upon the context and setting in which they occur. The example above oversimplifies the components of executive control but serves to illustrate that the expert does not suddenly possess the 'metacognition' skills inherent in the executive control feature. Instead, the skills are learned over time.

The last cluster in the Sternberg and Horvath (1995) model, insight, denotes the quality of seeing into a problem deeply. Through selective encoding (distinguishing between information that is relevant to a problem solution and that which is irrelevant), selective combination (combining pieces of information, which may or may not be relevant separately, to solve a problem), and selective comparison (applying all of an expert's acquired knowledge in another context), experts are able to develop more creative solutions to problems as they arise in their contextual settings.

Each cluster in Sternberg and Horvath's (1995) prototype of expert teacher knowledge consists of cognitive mechanisms and/or abilities thought to be related to expert performance. Expert practice is evidenced most frequently in three elements of the framework: in the expert's acquisition of tacit knowledge within the domain knowledge cluster; in planning, monitoring and evaluating problem solving situations in the efficiency cluster; and in having the insight to apply their combined knowledge and skills in new contexts and to new issues, problems or situations. The implications of this view are many, but, for the purposes of this research, three salient points stand out. First, the covert nature of much expert teaching knowledge underscores the importance of making expert teacher knowledge explicit. Second, this view of expert teaching knowledge accommodates the notion that reflection drives the acquisition of knowledge and skills and, conversely, that the acquisition of knowledge and skills creates opportunities for reflective practice. The third salient point is that this view provides insight into the social and perceptual processes

related to teaching expertise. The opportunities for reflective practice and the development of insight can best be achieved effectively through the cognitive apprenticeship model.

COGNITIVE APPRENTICESHIP IN A STUDENT TEACHING CONTEXT

Despite the essential role of integrated knowledge and practice in expert practice, few resources are devoted to higher order activities that require students to actively integrate and appropriately apply their skills and conceptual knowledge. Students in a practice setting often fail to use resources available to them to improve their skills because they lack models of the processes required for doing so. For example, pre-service teachers are unable to make use of potential models of good teaching acquired through theoretical coursework because they have no understanding of the strategies and processes required to reproduce their subject content knowledge in their students. To make a real difference in preservice teacher learning, both the cooperating teacher and student teacher need to understand the nature of expert practice and to devise methods appropriate to learning that practice. First, recognition must be given to the fact that processes such as planning, monitoring and evaluating are just as essential as subject-specific abstract conceptual and factual knowledge such as the principles surrounding the theory of magnetism. The integration of cognitive and metacognitive processes is crucial to expert practice. Collins et al., (1989) suggest that the integration can best be taught through methods that emphasize the 'successive approximation' of mature practice. This approximation has traditionally been employed in apprenticeship teaching. The interrelation of

modeling, coaching and fading provides the novice with key observational opportunities which provide a conceptual model of the task to be completed, a view of how that task is viewed within the culture, and multiple ways to complete the task based on the multiple models of expertise -in- use available to the novice. This development of a conceptual model through observation of a complex task frees the expert from having to teach the novice isolated subskills through lengthy practice.

I try to expose a block student to what really goes on in a classroom. Initially I have them watch from the back of the class...watch the way I do particular things: how I call roll, get a class started, organize materials...I jot these things down in a short check list to help guide observation ('Emily' in Kagan & Warren, 1991, p. 12).

Apprenticeship derives cognitively important characteristics from being embedded in a culture in which most members are participants in the target skills. It is not uncommon for apprentices to have access to multiple models against which to refine their understanding of complex skills. This cultural richness and variety helps apprentices to understand that there may be many ways to complete a task and to recognize that no one individual embodies all knowledge or expertise. Collins et al.(1989) propose a rethinking of the traditional methods embodied in apprenticeship to emphasize two issues. First, the method is aimed primarily at teaching the processes that experts use to handle complex tasks.

Where conceptual and factual knowledge are addressed, cognitive apprenticeship emphasizes their uses in ...carrying out tasks ... conceptual and factual knowledge are exemplified and situated in the contexts of their use. Conceptual and factual knowledge thus are learned in terms of their uses in a variety of contexts, encouraging both a deeper understanding of the meaning of the concepts and facts themselves and a rich web of memorable associations between them and problem - solving contexts. It is this dual focus on expert processes and situated learning that we expect to help solve the educational

problems of brittle skills and inert knowledge. (Collins et al., 1989, p. 457).

Second, the term, cognitive apprenticeship, refers to the focus of learning through guided experience on cognitive and metacognitive tasks rather than on physical skills and processes. Traditional apprenticeship has evolved from teaching in domains in which the process of carrying out target skills is external and thus readily available to both student and teacher for observation, comment, refinement, and correction and typically bears a relatively transparent relationship to concrete products. The relatively transparent relationship, at all stages of production, between process and product facilitates the learner's recognition and diagnosis of errors on which the early development of self-correction skills depends. Applying apprenticeship methods to largely cognitive skills, such as teaching, requires the externalization of processes that are usually carried out internally (Collins et al., 1989). Student teachers do not have access to the cognitive problem-solving processes of cooperating teachers as a basis for learning through observation and mimicry. Cognitive apprenticeship teaching methods are designed to bring these tacit processes into the open where students can observe, enact, and practice them with help from the cooperating teacher and from other student teachers (Collins et al., 1989). Since we cannot rely on the transparent relationship between process and product that characterizes the learning of traditionally taught apprenticeship skills, the procedural methods for teaching in this manner also require extended techniques to encourage the development of self-correction and monitoring skills.

TEACHING THROUGH COGNITIVE APPRENTICESHIP

There are two basic means for fostering the metacognitive skills that are crucial to the development of teaching expertise. First, cognitive apprenticeship encourages reflection of the differences between novice and expert performance through abstracted replay (alternation between novice and expert efforts with direct comparison through skillful verbal dialogue between the novice and expert). Highlights and lowlights are compared and contrasted while the expert explicitly describes those thinking processes which have led him/her to diagnose the performance as such. This explicit description sensitizes students to the details of expert performance as the basis for incremental adjustments in their own performance. This comparative approach also attempts to focus student observations and comparisons directly on the determining features of both their own and an expert's performance. Recording technologies, such as audio tapes or video filming equipment, are often used to allow the capturing of specific aspects of the students' performance (Collins & Brown, 1988). The expert may also be recorded to provide the student with a direct comparison model to review after the verbal discourse has taken place. A focused review of the practitioner's performance can assist the novice in learning to monitor and evaluate his/her own performance and move closer toward expert inclusion (Collins et al., 1989).

A second means of encouraging the development of self-monitoring and correction skills is based on the insight that these skills require the problem-solver (cooperating teacher) to use different cognitive activities while carrying out a complex task.

Complex cognitive activities frequently involve some degree of both generative and evaluative processes. Both types of processes are complex and are difficult to learn in tandem. Cognitive apprenticeship involves the development and externalization of the expert's internal dialogue. The complex and covert nature of teacher thinking illustrates the importance of distinguishing between traditional and cognitive apprenticeship methods for teaching students problem-solving techniques in a classroom setting. Learning to teach in a school setting involves the acquisition of physical skills, such as voice projection and body language, but it also requires the development of both the tacit and explicit skills of pedagogical and domain knowledge. Beyond the classroom, there also exists another tacit body of knowledge that determines expert practice within a teaching community: interacting with colleagues and administrators within the education system. In acquiring this diverse range of knowledge and skills, the type and level of communication between a student and cooperating teacher are crucial.

Studies by Lampert (1986), Schoenfeld (1985), Palincsar and Brown, (1984), and Scardamalia and Bereiter (1985) illustrate the need for conversation during the teaching of math, problem solving, reading and writing. In each of these studies, the development of self-monitoring and correction skills is based on the insight that these skills require for the student to alternate among different cognitive activities while carrying out a complex task. Using the cognitive apprenticeship framework, these skills can be taught explicitly, but not without discussion, alternation of teacher and student roles, and collaborative learning strategies. Each of these teaching

methods requires that the student and teacher engage in meaningful dialogue as a source of knowledge transmission. During the supervision of student teachers, this meaningful dialogue would take the form of conferences, with the topics of discussion aimed at providing the preservice teacher with the opportunity for articulation of a chosen path through the content and pedagogical knowledge. The clinical supervision model, originally developed by Goldhammer (1969), Cogan (1973) and then revised by Goldhammer, Anderson, and Krajewski (1980) has, as its root, the inclusion of pre- and post-observation conferences to provide the cooperating teacher and student teacher with the means to interact, face-to-face, for the purpose of "analyzing and reflecting on teaching behaviours and activities for instructional improvement" (Goldhammer, et al., 1980, p 20). Garman (1986) submitted that an important assumption in clinical supervision is that personal empowerment is necessary for achieving a professional identity. For Garman, empowerment in teaching is a result of maintaining a reflective approach toward the teaching, and that reflection is made possible through articulation and understanding of the teacher's rationale for action. In clinical supervision, dialogue is used to develop a mutual relationship between the cooperating teacher and student teacher that involves reflection on action as a process for examining practice (Garland & Shippy, 1995). Garman regarded this process of reflection "as being at the heart of clinical supervision" (1986, p. 2).

In conjunction with the process of reflection on action, Collins et al. (1989) describe four specific areas of their framework through illustrative models for teaching

reading, writing and mathematical problem solving. Crucial to all illustrations is the demonstration of an expert's thinking skills for solving any problem - not just the 'how' but the 'why' and what led to the 'why'. Seeing how experts deal with problems that are difficult for them is critical to developing students' beliefs in their own capabilities. Even experts stumble, flounder, and abandon their search for a solution until another time. "Witnessing these struggles helps students realize that thrashing is neither unique to them nor a sign of incompetence" (Collins et al., 1989, p. 473). The four dimensions which experts need to employ to create an 'ideal learning environment' are summarized in Table 2 and are described below.

Table 2

The Four Dimensions of Cognitive Apprenticeship

CONTENT	METHODS	SEQUENCE	SOCIOLOGY
Domain Knowledge	Modeling	Increasing Complexity	Situated Learning
Heuristic Strategies	Coaching	Increasing Diversity	Culture of Expert Practice
Control Strategies	Scaffolding	Global before local skills	Intrinsic Motivation
Learning Strategies	Articulation		Exploiting Cooperation
	Reflection		Exploiting Competition
	Exploration		

CONTENT

Recent research has separated the types of knowledge required for expertise, and, in particular, distinguishes between the explicit conceptual, factual, and procedural knowledge associated with expertise and various types of 'strategic' knowledge.

Collins et al.(1989) use the term 'strategic' to refer to the tacit knowledge that

underlies an expert's ability to make use of concepts, facts and procedures as necessary to carry out complex tasks. Sternberg and Horvath (1995) refer to this tacit knowledge as the hidden basis for intelligent action and contend that this knowledge is crucial to understanding expertise as it operates in the real world. Another type of tacit knowledge is the learning strategies that experts use to acquire new concepts, facts and procedures in their own or another field. The complexity of expert knowledge is underlined by Collins et al. (1989). "The appropriate target knowledge for an ideal learning environment is likely to include all four categories of expert knowledge, only one of which is often the current focus in schools" (p. 477). Shulman (1987) also supports this notion of expert practice but has concluded that, although characterizations of effective teachers exist, most of the descriptions are based on effective classroom management strategies rather than the management and development of ideas in the classroom. "Both kinds of emphasis will be needed if our portrayals of good practice are to serve as sufficient guides to the design of better education" (Shulman, 1987, p.4). The broader range of expert teaching knowledge is reflected in the following descriptions of the four components of content section of their cognitive apprenticeship model (Collins, et al., 1989):

Domain Knowledge "includes the conceptual and factual knowledge and procedures explicitly identified within a particular subject; these are generally explicated in textbooks, lectures, and demonstrations" (Collins, et al., 1989, p. 477). For instance, student teachers might accumulate basic knowledge in theoretical post-secondary coursework, such as learning from textbook descriptions about a variety

of teaching methods for managing difficult students. Though important, this kind of knowledge provides insufficient clues for many students about how to go about carrying out tasks in a domain. More importantly, when this type of knowledge "is learned in isolation from realistic contexts and expert practice, it[sic] tends to remain inert in situations for which it is appropriate" (Collins, et al., 1989, p. 477). Many of the crucial conceptual subtleties and their meanings are best acquired through applying them in a variety of situations.

Heuristic Strategies "are generally effective techniques and approaches for accomplishing tasks that might be regarded as "tricks of the trade" (Collins, et al., 1989, p. 478). Most heuristics are tacitly acquired by experts through the practice of being immersed in their community. Sternberg and Horvath (1995) refer to this portion of domain knowledge as pedagogical knowledge to be learned by teachers where the content-specific applications of teaching methods and content non-specific applications of tacitly driven classroom routines mesh to provide successful learning opportunities for students. For example, a teacher might choose to involve difficult or problematic students in a demonstration at key points during a demonstration. The involvement of these students insures that the selected students are focused on the task or skill to be learned, but also ensures that the rest of the group is focused on the task rather than distracted by the difficult students.

Control Strategies refer to the level and type of control over the process of carrying out a task. "As student teachers acquire more heuristics and control

strategies, they encounter new management systems for conceptual and factual knowledge" (Collins, et al., 1989, p. 478) which, in turn, allow them to decide how and when to employ them in realistic situations. For instance, the novice asks several students some questions during a demonstration but does not get the answers he/she expects. Depending on his/her level of acquired control strategies, the novice may or may not continue the demonstration without clearing up the anomalies in the answers that were given by the students. If, upon critique by the cooperating teacher, the student teacher cannot devise his/her own methods for solving this problem, it is likely that the expert will have to model and explicate his/her thoughts more clearly so that the novice may begin to formulate his/her own strategies. Formulating such strategies also requires reflection on the various processes which determine how to proceed in a particular situation.

Control strategies also operate at many different levels. Some strategies are global and can be applied across domains, such as possessing the ability to switch to a new part of a problem if one is stuck on another part, and some are more local or specific such as looking for cues within a current problem to help one solve it. In a student teaching context, an example of a global control strategy is if the student teacher observes that 'unfocussed' students in one class become successfully focused by becoming involved in the demonstration, and then applies this technique in another class with similar students. An example of a local strategy would be realizing the confusion of students during the demonstration, selectively determining where the confusion originates and, re-teaching those issues which somehow caused the

confusion. Part of the 'local' control strategy formulation requires that the teacher be able to determine how and where the problem began so that he/she can determine how to solve it.

Control strategies can have monitoring, diagnostic and remedial components. Decisions about how to proceed in a task generally depend on an assessment of the current situation relative to one's goals, on an analysis of current difficulties, and on the strategies available for dealing with difficulties. Monitoring strategies can be represented as activities that help students to evaluate their progress in a general way by providing simple criterion for determining whether or not a given goal is being achieved. Sternberg and Horvath (1995), in their efficiency cluster, would refer to this as executive control or metacognition. In this framework, planning, monitoring and evaluating become guiding mechanisms for the expert to begin reflecting on alternatives for achieving a goal. Kagan and Warren (1991) also support the development of control strategies in the journey to expert practice. In their research, the cooperating teacher structures and supports the classroom environment very carefully through the introduction of thinking skills which are required by a teacher. Thought processes are made explicit, and the novice must, in turn, practise them. Explicit connections are made between the process of teaching and the product of learning. These strategies support the development of self-monitoring and self-correction skills that are essential to competent teaching.

Learning Strategies are strategies for learning any of the other kinds of knowledge described above. "Knowledge about how to learn ranges from general strategies for exploring a new domain and knowing how to go about learning that information, to more local strategies for extending or reconfiguring knowledge" (Collins, et al., 1989, p. 479) such as transferring a learned principle to new situations. To accentuate a student teacher's need for learning how to execute a specific task, the 'coach' (cooperating teacher) needs to emphasize the cognitive as well as the behavioural aspects of teaching. Explicating the metacognition inherent in managing a class is crucial. Scaffolding is required for the student teacher to gradually reach the expectations of the cooperating teacher in this complex task. Throughout the learning process, it is important to keep in mind that the broad goal is to establish an accurate conceptual model of performance, rather than to merely shape performance.

The four content areas of domain knowledge, heuristic strategies, control strategies, and learning strategies provide the foundation of the cognitive apprenticeship framework. Together they serve as a guide for the practitioner to articulate and begin to formulate a conceptual overview of a teaching knowledge base that includes both content knowledge and how that knowledge can be learned and taught. As Shulman (1987) has pointed out, the teacher "must understand the structures of subject matter, the principles of conceptual organization, and the principles of inquiry that help answer two kinds of questions: What are the important ideas and

skills in this domain? and How are new ideas added and deficient ones dropped by those who produce knowledge in this area?" (p. 9).

METHOD

Shulman's (1987) questions are important for the practitioner to consider because they speak directly to the kinds of tacit knowledge that guide expert practice and lead the practitioner to question how he/she might make that knowledge explicit to the preservice teacher. "A key goal in the design of teaching methods should be to help students acquire and integrate cognitive and metacognitive strategies for using, managing, and discovering knowledge" (Collins et al., 1989, p.480). Crucial to the acquisition and use of these strategies are the interactions among the individual's current knowledge and beliefs, the social and physical environment in which the task takes place, and the local details of the task itself, as it unfolds. It is for these very reasons that student teachers report that the most valuable aspect of their education program has been their student teaching experiences - the only context in which all of the essential conditions for learning are present. Those who have been fortunate to have had not only an effective classroom teacher as a cooperating teacher, but someone who is also an effective supervisor for their student teaching experience, have been given a head start in their ability to become effective classroom teachers. They will more quickly fill the 'expert' position in their community, rather than remain a 'novice' for an extended period (Collins et al., 1989).

While articulation of the components inherent in one's discipline knowledge is difficult for the expert, the articulation of the nature of teaching is even more difficult, since teaching tends to occur in isolation from one's peers and, therefore, is not commonly discussed. The lack of articulation, according to Shulman (1987), has led to a practice which is devoid of a history. Without a system of notation, "the next steps of analysis, interpretation, and codification of principles of practice are hard to pursue" (p. 12).

Collins et al. (1989) present six methods in their cognitive apprenticeship framework to assist the practitioner not only to articulate the components but also to teach preservice teachers how to use their content knowledge to think like teachers. The six teaching methods fall into three groups. The first three methods - modeling, coaching, and scaffolding- are the core of cognitive apprenticeship, and are designed to help students acquire an integrated set of cognitive and metacognitive skills through processes of observation and guided practice. The next two methods - articulation and reflection- are methods designed to help students focus their observations of expert practice and consciously access and control their own practice strategies. The final method - exploration - is aimed at encouraging learner autonomy, not only in carrying out expert teaching practice, but also in defining and formulating the tasks to be performed. Each of the six methods - modeling, coaching, scaffolding, articulation, reflection, and exploration - is further defined below.

Modeling "involves an expert carrying out a task so that the student teacher can observe and build a conceptual model of the processes that are required to accomplish the task" (Collins, et al., 1989, p. 481). In cognitive domains, this modeling requires "the externalization of usually internal cognitive processes and activities - specifically the heuristics and control processes by which experts make use of basic conceptual and procedural knowledge" (p. 481). For example, the cooperating teacher might model a method of greeting students as they walk into the classroom and demonstrate this method for settling and engaging students for the period's work. While students are working on a task, the cooperating teacher may take a few moments to discuss why and how he/she accomplished this task with the student teacher (who may have observed the behaviours without appreciating their relevance), thereby making the expert's tacit knowledge explicit to the novice. Novice teachers can be helped in identifying salient aspects of classroom interaction, as demonstrated in the case of Emily, a cooperating teacher, studied by Kagan and Warren, (1991) who reported that she would:

make a student teacher watch me establish class routines and rules, particularly in the fall semester. I give a student teacher a list of questions that he/she must answer by watching me: e.g., How do I call roll the first few days of school, and how do I change the procedure subsequently? How do I quiet a class? What rules do I establish? What other forms of organization do I provide? What do I always write on the board? How do I have the students arrange their social studies notebooks? (p. 14)

By giving these specific questions to the student teacher, Emily is beginning to support the development of what Sternberg and Horvath (1995) call heuristic strategies.

Coaching "consists of observing a student teacher while he/she carries out a task and offering hints, scaffolding, feedback, modeling, reminders, and new tasks aimed at bringing the student teacher's performance closer to expert performance" (Collins, et al., 1989, p. 481). Coaching may serve "to direct the student teacher's attention to a previously unnoticed aspect of the task or simply to remind the student of some aspect of the task that is known but has been temporarily overlooked" (p. 481). This phase focuses on the enactment and integration of skills in the service of a well-understood goal through highly interactive and highly situated feedback and suggestions; the content of the coaching interaction is immediately related to specific events or problems that arise as the student attempts to carry out a target task. For example, the student teacher may have difficulty in settling the class and getting the students' attention to begin the lesson. As a result, he/she runs out of time to complete the lesson and will have to complete it the next day. The cooperating teacher can record the student teacher's experience and offer alternatives to meeting the same kinds of issues with the students or alternatives to presenting a more interesting way of delivering the lesson to secure the students' participation in the future. Coaching would also be demonstrated by having the cooperating teacher sit down with the student teacher at the end of each day and listen to him/her think through tomorrow's lesson. The cooperating teacher would make suggestions and reminders while helping the novice to operationalize the daily lessons (Kagan & Warren, 1991).

Scaffolding "refers to the supports the teacher provides to help the student teacher carry out a task. These supports can either take the form of suggestions or help, ...or they can take the form of physical supports" (Collins, et al., 1989, p. 482) When scaffolding is provided by the cooperating teacher, it requires him/her to carry out parts of the overall task that the student cannot yet manage. "It involves a cooperative problem-solving effort by the cooperating teacher and student teacher in which the express intention is for the student to assume as much of the task on his/her own as possible" (p.482). For example, the cooperating teacher and student teacher could team plan the lessons for the class and then team teach the class with the cooperating teacher assuming less and less responsibility as time goes by. This gradual reduction in responsibility by the cooperating teacher is called fading. Fading is an integral part of both scaffolding and the larger cognitive apprenticeship process, since scaffolding may take place at any time during the learning process.

Articulation includes any method of getting the student to articulate his/her "knowledge, reasoning, or problem-solving processes in a domain" (Collins et al., 1989, p. 482). Collins et al., have identified several different methods of articulation. First, "inquiry teaching is a strategy of questioning students to lead them to articulate and refine prototheories" (p. 482) about the four kinds of teacher knowledge enumerated earlier. For example, the cooperating teacher may systematically question the student teacher to evaluate a series of evaluation schemes for a unit that they are designing together in order to facilitate the student teacher in articulating his/her reasoning behind choosing one method over another. Second, the

cooperating teacher might encourage the student teacher to articulate his/her thoughts as they carry out a task. For instance, while planning the evaluation schemes for the unit, the cooperating teacher would encourage the student teacher to think out loud while planning the steps. Third, the cooperating teacher might have the student teacher assume a critical role in cooperative activities and thereby lead the student teacher to formulate and articulate his/her knowledge of the planning and evaluation procedures for developing a unit in a specific content area. Regardless of the form of articulation, facilitating the student teacher in describing his/her thinking is critical to supporting the leap from thinking like a student to thinking like a teacher.

Reflection enables the student teacher to compare his/her "own thinking processes with those of an expert, another student, and ultimately, an internal cognitive model of expertise" (Collins et al., 1989, p. 482). This stage is enhanced by the use of various techniques for reproducing or replaying the performances of both expert and novice for the purposes of comparison. Reflection may take the form of keeping journal notes on a daily basis or may be as elaborate as video-taping a lesson, which would then be critiqued by the student teacher and cooperating teacher, or by two or more student teachers. Interaction with others is an important stimulus for reflection. One of the features of cognitive apprenticeship is the use of and dependence on multiple models of expertise and multiple models of varying degrees of expertise. It is a worthwhile exercise to have student teachers observing other student teachers to enable them to learn as a group from each other, rather than

learn in isolation from one another. Nolan and Huber (1989) suggest that the primary aims of supervision should be to engage the preservice teacher in a process of reflective behaviour while fostering critical inquiry into the process of teaching and learning. Consequently, the preservice teacher's understanding of teaching practice is increased, and the repertoire of images and analogies the preservice teacher can call on to deal with problems becomes broader and deeper. This kind of understanding parallels Sternberg and Horvath's (1995) prototype clusters of efficiency and insight where reflective practice is critical to expert development. The expert reflects on past experience and accumulated knowledge to selectively encode, combine and ultimately compare all of his/her acquired information to the problem at hand. Similarly, Zeichner and Liston (1987) distinguish between reflective action and routine action, focusing on the need for reflective action rather than action guided by tradition, external authority, and circumstance. Nolan and Huber (1989) also emphasize the important role of reflection throughout a teacher's career: "Reflective teachers consistently assess the origins, purposes and consequences of their work" (p. 129). Brookfield (1987) refers to this reflection in action as 'praxis' and suggests that it is central to effective facilitation. A continual process of activity, reflection on that activity, collaborative analysis of the activity, followed by new activity with further reflection and analysis, is essential if a teacher is to become an expert practitioner within his/her community.

Exploration involves students moving to a level where they perform teaching tasks independently. Requiring students to enter the exploration stage is critical if they are

to learn to frame teaching opportunities/situations that they can implement successfully. "Exploration is the natural culmination of the fading of supports. It involves not only fading in the task but fading in the task setting as well" (Collins et al., 1989, p. 483). Fading in the task would include behaviours such as not suggesting hints or contributing ideas during the planning of a unit, or lesson. Fading in the task setting would include behaviours such as not being present in the classroom during roll call or during the opening portion of the class. But student teachers will not know how to function productively at the exploration level unless exploration strategies are taught. For example, the cooperating teacher does not team plan or team teach with the student teacher any more. Rather, he/she leaves the student teacher to 'fly solo' with the class. Emily, the cooperating teacher in Kagan and Warren (1991), required the student teacher to design a unit on his/her own and show her a rough draft of the unit. She then evaluated the unit by asking the student teacher a series of questions such as "What are your objectives? How do you combine factual learning with higher level thinking? What other resources will you use besides the text? Do you provide a balance of high and low energy activities? How does the unit teach students to function effectively in today's world?" (p. 15). This required articulation of decisions and thought processes compels the student teacher to think like an expert teacher. The implication of this questioning process reinforces an earlier argument that "most of a teacher's professional skill is non-observable" (Kagan & Warren, 1991, p. 15).

These six methods of modeling, coaching, scaffolding, articulation, reflection and exploration can be likened to a procedural set of instructional techniques. This procedural set will assist cooperating teachers to transmit the enculturated knowledge of teaching to student teachers. Kagan and Warren (1991) remind us that cooperating teachers are often selected on a basis of their willingness to participate in student teaching programs, rather than on their ability to articulate the nature of teaching. These methods assist the transmission of knowledge by providing a communication framework on which conferencing between expert and novice teachers can be based.

SEQUENCING

Lave (1988) has suggested that research emphasis on early skill acquisition has resulted in a failure to recognize the changing learning needs of students at different stages of skill acquisition. Consequently, cooperating teachers often fail to sequence and structure materials and activities appropriately for those intermediate stages. Those who plan learning experiences also need to understand that the integration of local or specific skills into a more complex, global environment is dependent upon opportunities to participate in interactions in ways that succeed over a broad range of situations (Anderson et al., 1996). This need for integration implies consideration of both the specific situation in which learning and development are viewed, and the more general progress along trajectories of participation and growth of professional identity (Lave & Wenger, 1991). Methods and sequence of instruction are not only instruments for acquiring skills; they also are practices in which students learn to

participate. In these practices, students “develop patterns of participation that contribute to their identities as learners, which include the ways in which they take initiative and responsibility for their learning and function actively in the formulation of goals and criteria for their success” (Greeno, 1997, p. 9).

The strategies for sequencing these highly complex processes to meet students’ individual developmental needs are as follows (Collins et al., 1989):

Increasing complexity refers to "the construction of a sequence of tasks and task environments where more and more of the skills and concepts necessary for expert performance are required" (Collins et al., 1989, p. 484). There are two methods for helping the novice to manage increasing complexity. First, "efforts should be made to control task complexity" (p. 484). For example, helping the student teacher plan a lesson as opposed to planning a whole unit, would be one way to control task complexity. A second strategy is the use of scaffolding. This enables a student to handle a complex set of activities needed to carry out any task by supporting the decision-making process necessary to complete the task. Using the example above, a cooperating teacher may help the student teacher decide where in the unit a particular lesson belongs or identify what other support materials or lessons will be required to complete the unit.

Increasing diversity refers to the "construction of a sequence of tasks in which a wider and wider variety of strategies or skills are required" (Collins et al., 1989,

p.484). Although it is important to practice specific strategies or skills repeatedly, as each skill becomes well learned, "...it is also important that tasks requiring diverse skills and strategies be introduced so the student learns to choose and combine appropriate strategies to complete complex teaching tasks in different contexts" (p. 484). For example, after the student teacher has planned the lesson for a particular class, it may be useful to plan the same topic for a class operating below or above the level for which the initial lesson was planned. Another example would be to plan the assignment for a lesson and then modify the assignment to meet the needs of a special education student in the class. As students learn to apply skills to more diverse problems and situations, their strategies become freed from their contextual bindings and they acquire a richer set of contextual associations.

Global before local skills is a strategy for "sequencing lessons so that students have a chance to apply a set of skills in constructing an interesting problem solution before they are required to generate or remember those skills" (Collins et al., 1989, p. 485). Rather than first appreciating the task as a whole, there is a bias toward supporting the lower level or composite skills that students must put together to carry out a complex task. The chief effect of the global to local sequencing principle is to allow students to build a conceptual map before attending to the details of the terrain. This strategy is also supported by expert modeling. When the learner is able to carry out only a portion of the task, having a clear conceptual model of the overall activity both helps him/her make sense of the pieces that apply to a target task and provides a clear goal toward which to strive as he/she takes on and integrates more

and more of the pieces. For example, a student teacher may not be able to design an entire unit of study for the class. but he/she may be able to develop one particular lesson with the cooperating teacher's help. Knowing where the lesson fits into the unit, and knowing what has come before this lesson and what will immediately follow, will allow the student teacher to incorporate parts of the previous lesson (perhaps in the form of review exercises) into the introduction of the present lesson, and to include parts of the next lesson in the summary portion of the present lesson. The presence of a clear conceptual model of the overall target task acts as a guide for the learner's performance, thus improving his/her ability to monitor his/her own progress and to develop attendant self-correction skills. Having an understanding of the purpose of the acquisition of specific skills can also serve to prevent students from developing "bugs" in the acquisition of individual composite skills.

Thus, sequencing student teacher activities according to complexity, diversity, and global or local applicability helps the student teacher to develop an understanding of the purpose of the various skills and to clarify the conditions under which they are applicable, their composite elements and their relationships to other processes. One of the difficulties student teachers face in the pedagogical application of newly acquired tacit teacher knowledge is trying to figure out where the composite parts fit. By presenting the student teacher with the global picture first, and by structuring opportunities for the complexity and diversity to increase at a gradual pace, the cooperating teacher will be able to provide the student teacher with learning opportunities that the student teacher will be able to incorporate and maintain in not

only lesson planning within a unit but in the execution of those lessons and eventually into unit design. The foregoing discussion of sequencing demonstrates that many decisions need to be made throughout the planning process. How those decisions are made and how decisions affect the execution of the plans are determined by the culture in which the practice takes place.

SOCIOLOGY

The sociology of the learning environment is also crucial in decisions about curriculum and pedagogical practice and the ways these decisions affect learning. Apprentices learn skills in the context of their application to realistic problems and within a culture focused on and defined by expert practice. They continually see the skills they are learning being used in a way that clearly conveys how they are integrated into patterns of expertise and their efficacy and value within the subculture. "These characteristics - the ready availability of models of expertise-in-use, the presence of clear expectations and learning goals, and the integration of skill improvement and social reward - help motivate and ground learning" (Collins et al., 1989, p. 486). Certain aspects of the social organization of apprenticeship encourage productive beliefs about the nature of learning and of expertise that are significant to the learner's motivation, confidence, and his/her orientation toward problems that are encountered as he/she learns. Structuring the social context to encourage the development of these productive beliefs sets the stage for the development of cooperative learning styles and of collaborative skill generally. Because of the key belief that expert knowledge is not concentrated in any single person, skilled

collaborators are more likely to be open to and seek help and input from others.

Collins et al. (1989) suggest that there are five critical characteristics affecting the sociology of learning:

Situated learning is a critical element in fostering learning and involves students carrying out tasks that "reflect the multiple uses to which their knowledge will be put in the future" (Collins et al., 1989, p. 487).

Students come to understand the purposes or uses of the knowledge they are learning. ...They learn by actively using knowledge rather than passively receiving it. ...They learn the different conditions under which their knowledge can be applied. ...Learning in multiple contexts induces the abstraction of knowledge so that students acquire knowledge in a dual form (p. 487)

in which knowledge is associated with the specific contexts of its uses and is generalized to be available for use independent of any particular context. This kind of learning appears to be one of the primary reasons for placing student teachers into departments in schools (where departments exist), rather than with one particular teacher for the duration of their student teaching experience. In a department, students will have a variety of teaching experiences within their content area and will observe and work with a number of models of expertise.

Culture of expert practice refers to the "creation of a learning environment in which the participants actively communicate about and engage in the skills involved ...in the practice... of carrying out tasks in a domain" (Collins et al., 1989, p. 488). A culture of expert practice helps situate and support learning in several ways. A

culture focused on expert practice provides learning with readily available models of expertise-in-use. "A learning environment in which experts simply solve problems and carry out tasks, and learners simply watch, is inadequate to provide effective models for learning, particularly in cognitive domains where many of the relevant processes and inferences are tacit" (p. 488) and covert. The act of explicating tacit knowledge by the expert is critical to fostering the 'thinking-like-a-teacher' behaviour so crucial to a successful exploration phase of student teacher development (Kagan & Warren, 1991).

Intrinsic motivation is also "related to the issue of situated learning and the creation of cultures of expert practice" (Collins et al., 1989, p. 489). Lepper and Greene (1979) and Malone (1981) discuss the importance of creating learning environments in which students perform tasks because they are intrinsically related to an interesting or at least coherent goal, rather than for some extrinsic reason. The methods of modeling, coaching, and fading "support intrinsic motivation insofar as they promote the acquisition of integrated skills in the service of a coherent overall activity" (Collins et al., 1989, p. 489).

Exploiting cooperation "refers to having students work together in a way that fosters cooperative learning [sic]" (Collins et al., 1989, p. 489). Many opportunities for cooperation already exist in school. For instance, vertical team planning in content areas is a popular planning strategy in schools where students will remain in the same building for a period of several years during their education. Vertical

planning in any one content area involves designing curricula as a continuum across grade levels. This strategy is employed by expert teachers to maintain continuity in programming and to gain insight into their colleagues' programming structures and strategies. A collaborative vertical teaming experience could also be arranged for several student teachers if one department has several student teachers across its grade levels. This strategy is a "powerful motivator and a powerful mechanism for extending learning resources" (Collins et al., 1989, p. 489). Cooperative learning provides participants (whether expert or novice) with an additional source of scaffolding in the form of knowledge and processes distributed throughout the group of student teachers. Despite its advantages, one crucial aspect of collaborative vertical teaming with which students may have difficulty is the multiple roles that a participant must play to carry out a cooperative task successfully. To help meet this challenge, cooperative learning can foster the situated articulation of processes and concepts, thus providing support for students to gain conscious access to and control of cognitive and metacognitive processes and the ways these employ conceptual and factual knowledge.

Another way to exploit cooperation in a student teaching experience, is to hold regular seminars with groups of student teachers, the seminars being led by a teacher in the school who may possess 'expert' knowledge on a topic of interest. These seminars would provide generalizable insight, while fostering cooperative ventures for scaffolding and sharing learned insights among the student teachers.

Exploiting competition refers to the strategy of giving a number of students the same task to carry out and then comparing the responses generated by each student. "One of the important effects of comparison is that it provides a focus for students' attention and efforts for improvement by revealing the sources of strengths and weaknesses" (Collins et al., 1989, p. 490). For this phase to be effective, "comparisons must be made not between the products of student efforts, but between the processes" (p. 490). For example, a seminar session could be held in which the student teachers share discipline strategies and compare how their strategies proved effective or ineffective in a variety of situations.

The five critical characteristics affecting the sociology of learning, -situated learning, culture of expert practice, intrinsic motivation, exploiting cooperation and exploiting competition- permit novice teachers to learn expert teacher skills in the context of their application. As Schon (1987) has pointed out, " the problems of real-world practice do not present themselves to practitioners as well-formed structures. Indeed, they tend not to present themselves as problems at all but as messy, indeterminate situations" (p. 4). To prepare student teachers to be effective, consideration needs to be given to "the competence and artistry already embedded in skillful practice" (Schon, 1987, p. xi). When expert teachers are faced with unique situations, experience grounded in the context of the culture guides the decisions made on how to proceed next as they draw on their repertoire of understandings, images, and examples to arrive at new ways of framing problems and new possibilities for solutions. For student teachers, learning to make effective and

situationally-appropriate decisions means that the unique situations must be present for learning and practice to be effective. For cooperating teachers, the arrangement of classroom experiences for student teachers must reflect unique situations and be presented to demonstrate and connect how expert teachers make their choices.

The cognitive apprenticeship model encourages reflection on the differences between expert and novice performance and the development of self-monitoring and correction skills through analysis of both the tacit and explicit skills associated with expert teacher practice. The model grounds learning in the culture of expert practice to provide the learner with a context of use. Student teachers learn to become expert teachers not only through research-based coursework but by being immersed in the culture from which the research was derived. The four global categories of content, method, sequencing and sociology provide the cooperating teacher with a means for teaching and provide the student teacher with a framework for understanding the diverse range of knowledge and skills associated with expert practice. At the heart of the model is the need for clear communication between the student and cooperating teacher to make the tacit knowledge inherent in the model's four content areas of domain knowledge, heuristic strategies, control strategies, and learning strategies explicit. Sequencing learning opportunities from simple to complex, specific to diverse, and global to local in the context of their use requires a methodology that provides the cooperating teacher with as many opportunities as possible to transmit the expert knowledge so the student teacher can engage in meaningful learning situations. The methodology in the cognitive apprenticeship

model is illustrated most effectively through the conferencing which takes place between student teachers and cooperating teachers during the student teaching experience. As expert practitioners, our understanding of the student teaching experience must be as complete as possible if we are to help novices become experts. The cognitive apprenticeship model provides a framework for student teachers, cooperating teachers and faculty advisors to teach and evaluate the learning which takes place during the student teaching experience.

PREVIOUS RESEARCH ON STUDENT TEACHING AND STUDENT TEACHER SUPERVISION

Despite the importance of the student teacher experience in teacher education, there is a paucity of existing research. Generally, the research focus has been on theoretical coursework to prepare students to begin the student teaching experience, not on the experience of learning how to teach in the professional culture in which they will be immersed or on the roles of their cooperating teachers. Kagan (1992) suggests that for professional growth to occur, prior beliefs and images must be modified and reconstructed. She says that student teachers approach the classroom with a critical lack of knowledge on a variety of levels. "The availability of role models, seasoned teachers who question and reflect on their own pedagogical beliefs..." (Kagan, 1992, p. 142) is necessary to help modify pre-existing images and beliefs on the part of the student teacher. From the perspective of the cooperating teacher "classroom teaching appears to be a peculiar form of self-expression in which the artist, the subject, and the medium are one" (Kagan, 1992, p. 164). Too

often it is assumed that good teachers automatically make good cooperating teachers. “The transition from teacher to cooperating teacher was anything but automatic” (Clarke, 1995, p. 1). His research suggests that universities have recently begun to offer professional development programs on the nature of supervision and a variety of procedures for supervising a student teacher effectively.

In Clarke’s (1995) research, the term ‘coaching’ is used to denote the rather intimate relationship that exists between a cooperating teacher and student teacher in a practicum setting. The institution of a “coaching practicum” is used deliberately to underscore the need for cooperating teachers to know how to provide learning opportunities that honour three important characteristics of knowledge generation: that it is personally constructed, socially mediated and inherently situated. One of the most frequent themes in Clarke’s (1995) study was the importance of establishing a safe, non-threatening environment for the student teachers. Other salient themes were the realizations by cooperating teachers that first, observation required more skill than they originally assumed; second, effective supervision demanded flexibility in coaching styles; third, a priori preparation for conferences with their student teachers was essential. Clarke’s research demonstrates that for many of the same reasons that preservice teachers are required to complete a practicum, potential supervisors of those student teachers should complete a practicum before being engaged as the cooperating teacher.

McIntyre and Killian (1987) examined the training needs of cooperating teachers by determining the effects of training based on a needs analysis. They then compared the effects of the trained cooperating teachers versus untrained cooperating teachers, and the effect of that training, on instructional activities of early field experience students. Their results indicate that preservice teachers assigned to trained cooperating teachers were significantly more involved with students and received more feedback from their cooperating teachers than did their counterparts who were not assigned to trained cooperating teachers.

In an effort to describe more effectively the complex and challenging task of student teacher supervision, Guyton (1989) suggests that there are eight major categories of interaction which occur between the cooperating teacher, student teacher and the teacher education institution. These categories are: planning, observation, communication and conferencing skills, reflection/analysis/synthesis, evaluation, cooperating teacher goals, student teacher goals, and teacher education program goals. Though the conferencing skills are listed here as a separate category, Guyton reminds us that the primary medium through which the expert teacher knowledge in the other categories is taught, is during the conferencing episodes.

In contrast to Guyton's conceptualization of the eight research categories, the present research is designed to specifically explore a more comprehensive conceptualization of the conferencing process and how student teacher supervision can be enhanced through the use of the cognitive apprenticeship framework during

conferencing. Previous research illustrates that conferencing between the expert and novice typically is based around a variety of interactions such as planning, observing, reflecting, articulating, synthesizing and goal setting and modification (Goldhammer et al., 1980; Collins et al., 1989; Guyton, 1989; Kagan & Warren, 1991; Garland & Shippy, 1995). By modeling the thinking skills of a teacher, a student teacher will be able to observe those skills and begin to form a conceptual map of the knowledge required to teach effectively. Conferencing provides the opportunity for the cooperating teacher to continue to model his/her thinking processes for the student teacher. The expert thinking process modeling, in turn, encourages the student teacher to articulate his/her thinking processes and decision-making skills while discussing the nature of planning, observing, reflecting, and so on. The cooperating teacher can then encourage reflection through his/her narrative and finally help the student teacher to explore new topics and ideas. Gradual provision for independent practice is provided to the student teacher as classroom situations allow for increasing complexity and diversity. As demonstrated by the research of Kagan and Warren (1991), this process will support continued exploration by the student teacher to plan, monitor and self-correct as the student teaching experience continues.

Existing research on the student teaching experience suggests that two areas of cognitive apprenticeship research would contribute to an enhanced conceptual framework to guide the student teaching experience: the six dimensions of Collins et al. (1989) methodology for cognitive apprenticeship, (modeling, coaching,

scaffolding, articulation, reflection and exploration) and the four levels of content knowledge of the cognitive apprenticeship framework (domain knowledge, heuristic strategies, control strategies and learning strategies). These major innovations in current cognitive research could be applied to formulate explicitly the strategies and skills underlying expert cooperating teacher practice and make this knowledge a legitimate focus of teaching in Faculties of Education. This knowledge can also provide a focus for establishing supervisory programs for cooperating teachers to allow those highly effective classroom teachers to also become highly effective supervisors for student teachers. In most communities of practice, transmitting the four levels of content knowledge of the cognitive apprenticeship framework (domain knowledge, heuristic strategies, control strategies and learning strategies) and using Collins et al., (1989) six teaching methods (modeling, coaching, scaffolding, articulation, reflection, and exploration) happens, for the most part, intuitively and inconsistently. The focus of this research is to determine the extent to which cognitive apprenticeship is represented in a particular community of practice, and to explore the feasibility of structuring the conferencing experience according to a cognitive apprenticeship framework so that effective student teaching experiences occur more frequently by design.

Considering the cognitive apprenticeship framework for the design of student teacher learning environments provides a critical lens for evaluating the strengths and weaknesses of different learning environments and teaching methods. This approach has potential implications for the design of teacher training programs, and

for training in supervision for cooperating teachers. One of the most critical components of the cognitive apprenticeship framework is that the cognitive skills are taught in a setting in which a community of practitioners can demonstrate their function in the culture. Conversation and narratives that derive from the culture and the experiences of a community of practitioners are crucial to the transmission of the culture of expert practice (Collins et al., 1989). Conferencing between the cooperating teacher and the student teacher is a natural part of the culture in which the narratives play such a critical role. Using those narratives as the vehicle for transmitting the culture to the student teacher can be procedurally organized around the typical interactions that occur between the cooperating teacher and the student teacher.

The situated learning explored in the present study is that part of learning to be a teacher that is embedded in the community of teaching practice: the student teaching experience. Within a framework of cognitive apprenticeship, this research seeks to identify and to describe conferencing behaviours on the part of the cooperating teacher which appear to be effective in supporting this situated learning process for preservice teachers. It is proposed that the procedural methods of Collins et al., (1989) cognitive apprenticeship framework for teaching applies to creating more effective conferencing between cooperating teachers and student teachers. The specific aspects of teaching typically explored in conferencing are planning, observation, communication, reflection/analysis/synthesis, evaluation, cooperating teacher goals, student teacher goals, and the teacher education program goals

(Guyton, 1989). The methods by which these aspects of teaching can be learned in a contextual setting can be framed within the six methods for teaching through cognitive apprenticeship: modeling, coaching, scaffolding, articulation, reflection and exploration.

Apprenticeship is the way we learn most naturally. It characterized learning before there were schools, and it is illustrated in contemporary examples ranging from learning one's language to learning how to drive a car. The cognitive apprenticeship framework developed by Collins, Brown and Newman (1989) helps to point the way toward the redesign of student teacher supervision so that students may better acquire expertise and an improved ability to continue to learn throughout their careers.

THE QUESTIONS

Based on an analysis of previous research, the present research is designed to explore how the principles of cognitive apprenticeship are reflected in the conferencing experiences of cooperating teacher - student teacher pairs, with particular emphasis on the teaching methods that cooperating teachers use during conferences. The following questions guided this exploratory study:

1. Are the global elements of content, methods, sequencing and sociology of the cognitive apprenticeship framework reflected in the conferencing experiences of student teacher and cooperating teacher pairs?
2. What other factors emerge as important to facilitating the development of preservice teachers during the student teaching experience?
3. Is the cognitive apprenticeship model an effective tool for understanding or enhancing the learning that takes place in conferencing between cooperating teacher and student teacher pairs?

CHAPTER 3: METHODOLOGY

The methodology chosen for the present study was designed to investigate the following questions: Are the global elements of content, methods, sequencing and sociology (and their specific elements) of the cognitive apprenticeship framework reflected in the conferencing experiences of student teachers and cooperating teachers? What other factors emerge as important to facilitating the development of preservice teachers during the student teaching experience? Is the cognitive apprenticeship model an effective tool for understanding or enhancing the learning that takes place in the conferencing between cooperating teacher and student teacher pairs? In choosing a methodology to investigate these questions, it is essential that the strategies chosen for data collection and analyses can contribute to an understanding of the meaning of events and interactions to the participants in the conferencing situation. Making implicit teacher knowledge explicit to the novice is part of immersion in a practice culture and requires the use of dialogue and reflection. Cognitive and metacognitive strategies and processes, such as decision-making, self-monitoring and problem-solving skills, are the tools through which various abstract concepts, facts, technical skills and affective elements are manipulated. Conversations between the expert and novice must be encouraged, not inhibited, if access to the implicit expert teacher knowledge is to become transparent to the novice. These data seldom will be generated independent of a particular teaching context, and care must be taken to illustrate the subjective nature of peoples' behaviour and to recognize that many behaviours will be context

dependent. Since behaviour and language will change due to the context and setting in which they occur, searching for patterns and themes relative to the cognitive apprenticeship framework will always involve an interpretation of human interaction that combines dialogue and context (Bogdan & Biklen, 1982). Therefore, the methodology chosen should have the potential to generate a rich description of the interactions that take place during conferences between student teachers and cooperating teachers and should capture the personal and situational contents that influence conferencing behaviours. In capturing actual aspects of the conferences from the perspectives of both the cooperating teacher and the student teacher, the present research is designed to provide rich descriptions of conferencing experiences that might be useful in identifying ways to facilitate more effective conferencing between cooperating teachers and student teachers and ways to enhance the situated learning that takes place.

The complexity of the conferencing phenomenon cannot be accessed through a single data source. To capture the complex interactions among people, processes and context in the conferencing experience, a three-pronged methodology was developed. The three elements of the methodology included collecting 1) audio-tapes of selected conferencing episodes; 2) written reflections from individual cooperating teachers and student teachers on these same conferencing episodes; and 3) focus group data from the perspectives of cooperating teachers and student teachers on the student teaching experience. These three data sources provided

different, but complementary, data on the substance and contexts of the conferencing experience.

The primary data source in the methodology was the audio-tapes of selected conferencing episodes. By audio-taping conferences between the cooperating teacher and student teacher pairs, it was possible to "reproduce the data as they become evident...in the field" (Lincoln & Guba, 1985, p. 240) preserving both the fidelity and structure of each episode. The recorded episodes provide a detailed account of the interaction between the pairs in the participants' own words and, as such, provide actual glimpses of the experience against which other data sources can be referenced.

Although verbatim records provide high fidelity reproductions of an episode, there are multiple ways of interpreting these experiences regardless of whether one is observing those experiences or interacting in them. It is the *meaning* of our experiences and the culture in which they occur that constitutes our reality. Given that the interactions captured during the audio-taped conferences may have multiple meanings dependent on context, it will be important to collect points of view from the participants to help define, interpret and elaborate those meanings. The collection of the cooperating teachers' and student teachers' reflections on the taped conferences as a second data source permitted those context-dependent points of view to be illustrated and explained at a lower level of inference on the part of the researcher. These reflections from the participants, along with audio-taped

conferences, supported the notion that “qualitative researchers are concerned with process rather than simply with outcomes or products” (Bogdan & Biklen, 1982, p. 28). It is important to consider how meanings and understandings between the pairs of cooperating teachers and student teachers have been negotiated, how certain notions become known as ‘common sense’ or ‘wisdom’ to the participants and how these notions may or may not be illustrated in the teaching methods used by the ‘expert’ to help the ‘novice’ move towards expert practice. The participants’ written reflections contributed to the interpretation and elaboration of the verbatim records by providing data on the context for conferencing interactions.

As a third data source, focus group data are useful for elaborating the interactions which took place during conferences. In assembling groups of people with common qualities (in this case, a group of cooperating teachers and a group of student teachers), it is possible to use group interaction to gain insight into why and how people who are situated in a particular context hold the beliefs and opinions that they do. A focus group is a “carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment” (Krueger, 1988, p. 18). Establishing a comfortable physical and emotional environment among the investigator and participants is important if trust and credibility between all participants are to be demonstrated. The focus group approach to data collection permits discussions to begin with limited assumptions and remain more open-ended than traditional structured interviews or surveys. This open-endedness allows the socially constructed, context-dependent reality of the

participants to surface more freely, especially since this process uses the natural setting of the participants and provides for flexible probing by the investigator. This process also has high face validity for participants as it serves to confirm experiences across a group.

Group interaction during a focus group tends to enhance the richness of the data. First, participants use their own words to respond to the investigator's questions. Second, group interaction provides dynamic discussion as new ideas are brought to the surface by the participants - ideas which individual participants may not have thought of if not cued by another participant. Third, group discussions also provide a diversity of perceptions which may be important to confirm and elaborate the first two data sources of audio taping and reflective notes. Though the cognitive apprenticeship model provides for guided learning, its methods lean towards guiding learner discovery of knowledge and its application rather than being excessively directive during the discovery. The focus group procedure is consistent with this approach in that it depends on group dynamics to provide a useful venue for exploring how people regard an experience, idea or event. Since the nature of this research is to explore how a cognitive apprenticeship model may support particular aspects of the interaction between cooperating teachers and student teachers, this method was chosen to allow the investigator to get a glimpse of reality from the points of view of a larger number of cooperating teachers and student teachers.

In addition to these three data sources, a reflective journal was kept by the investigator during the course of the study. The journal allowed the investigator to explore her own feelings and insights as the study unfolded. It was used to question and analyze new directions for investigation as they arose and to identify new themes and patterns as data was collected. The journal allowed, for example, an examination of the time of day and the atmosphere in which the sessions were held. After reflecting on the physical setup of the first session, the researcher did change the seating order for the student teachers next session to try to get the more hesitant or timid students to feel more comfortable and to speak more in the second session. A seating arrangement change was made in the second session for the cooperating teachers too, to resolve a similar problem. Sections of the journal included a daily log, logistics of progression (those decisions which influenced the methodology, particularly if there was a change in direction) and a personal diary. Items recorded in the personal diary section were events which occurred during the data collection that affected the researcher's progress and the decisions made thereafter. The logistics of progression section contains items which affected the choice of the types of questions to ask each of the groups. Statements or themes which came directly out of the recorded conferences tended to have the greatest influence on these progression decisions. Together, these elements of the journal provided the record of the decision path which guided the reserach.

One of the six teaching methods of the cognitive apprenticeship model is a reflective component. Without reflection on events or ideas as they unfold, growth and

learning become contracted. Reflection "enables students to compare their own [thinking] processes with those of an expert...and ultimately an internal cognitive model of expertise. Reflection is enhanced by the use of various techniques for reproducing or 'replaying' the performances of both expert and novice for comparison" (Collins et. al., 1989, p. 482). Used in this sense, the reflective journal is one method for the investigator to demonstrate movement towards expertise as an investigator. It was important to this investigator to learn as much as possible from this research opportunity, and, in keeping a reflective journal, she should be able to demonstrate that learning. If the purpose of research is to provide insight into a topic for particular field practitioners (in terms of the content and methods which the research may illustrate), it is reasonable to expect the researcher to provide the same kinds of insight for an investigator practising in the same field.

RESEARCH SITE

This research was conducted at a large suburban secondary school which serves the educational needs of approximately 1000 students in grades 7 - 12. The student body is culturally and socio-economically diverse. This school has served its community through a wide variety of programs for 35 years. Diverse programming at all grade levels includes regular and advanced academic subjects, advanced placement programming at the senior high level, industrial technology, human ecology, a large special education department (including autistic and multiple handicapped programs), a flexible learning program which is exemplified by its multigraded classrooms (grades 7, 8 and 9 in one class) and thematically organized curriculum,

fine and performing arts, and a wide variety of sports and physical education programs. The school also offers programming for teen mothers who wish to return to high school to complete their education. Programming is non-semestered at the middle school levels (grades 7 and 8), partially semestered for Senior 1 (grade 9) and semestered for Senior 2 to Senior 4 levels (grades 10 - 12).

The school is administered by three principals: a head principal, and one vice-principal each for middle and high school affairs. The staff complement of teaching and non-teaching personnel is approximately 110 persons (55 teaching personnel and 55 clerical staff, teaching assistants, and custodial personnel).

SAMPLE SELECTION

In qualitative research, the selection of an adequate and appropriate sample is critical. If quantitative methods for sample selection are used in a qualitative study, "the research may be placed in 'double jeopardy' ", violating both the quantitative principle of adequacy of sample size to achieve representativeness and the qualitative principles of purposeful sampling (i.e., selecting the best informant to meet the informational needs of the study) and of selecting a "good" informant (i.e., one who is articulate, reflective, and willing to share with the interviewer) (Morse, 1989, p. 117).

The sample was chosen for this study by purposeful sampling. With this method of sampling, the investigator chooses potential participants and requests that they

volunteer to share their expertise with the investigator. This method depends on the investigator having prior knowledge about the qualities of an informant, including the informant's level of expertise, ability to be reflective and critical, and the informant's willingness to share the information with the investigator. As the investigator has been a member of the school's staff for nine and one-half years, she is knowledgeable about which staff members could provide relevant data for the study. This study was designed to find evidence of conferencing skills between cooperating teachers and student teachers. Prior knowledge about which staff members would be good informants was, therefore, an asset.

Good informants must be "knowledgeable about the topic and experts by virtue of involvement in specific life events and/or association" (Morse, 1989, p. 121). A good informant must also be someone who has "undergone or is undergoing the experience and is able to reflect and provide detailed experiential information about the phenomenon" (Morse, 1989, p.121). Good informants must be willing and able to critically examine the experience and their response to experiences, and must be willing to share the experience with the investigator. Therefore, in the researcher's choosing of nine individuals from various departments and grade levels, it was important that the cooperating teacher sample and the corresponding student teacher sample was both adequate and appropriate for data collection methods. When one of the cooperating teachers chose to remove herself from the study and three student teachers dropped out of the student teacher program, and another student teacher chose to continue her practicum at another school, these five

informants were not able to provide the necessary data. They were dropped from the study, and a secondary sampling method (the snowball technique) was employed to preserve the sample according to the sampling criteria established for the study.

A potential outcome of purposeful sampling is that it can result in a set of data that is biased in a particular direction. Bias control has been a concern from the outset of this research due to the investigator's employment at the site. To control for bias in the sample, the investigator deliberately sought out negative cases and informants with atypical experiences. Seeking out negative cases was done to ensure that the analysis was not distorted towards a single perspective. Since this research is designed to identify conferencing practices, negative cases and atypical experiences should provide sufficient evidence to control for sample bias towards a certain style of student teacher supervision. A second strategy for minimizing bias was to optimize variation in the data. Variation was enhanced by using thick descriptions to explain concepts, patterns, and themes as they emerged from the various data files and the final data set. Finally, preliminary research findings were shared with the participants to confirm the accuracy from the participants' points of view of the investigator's interpretations of the data on file.

ENTRY PROCEDURES

Before any volunteers were sought, the investigator met with the head principal to elicit his support for the research (Appendix A). Once the project was granted approval, by both the university and school division ethics committees, the

individual teachers were approached by the investigator. The investigator set the cooperating teacher participation criteria as follows: minimum of five years of full time teaching experience and a minimum of three consecutive years experience in working with a student teacher. The proposed research was outlined in detail during a presentation at a regular staff meeting. At the end of the presentation, interested teachers were asked to leave a note in the researcher's mail box if they wished to volunteer. The researcher then contacted potential participants individually to answer their questions about the research project and to explain more fully, the focus and methods for the research.

Eight cooperating teachers were initially identified by the investigator as potential candidates for this study. The investigator identified eight individuals to allow for the fact that not all potential candidates may want to volunteer. In addition, not all of the volunteers would necessarily have student teachers in the fall of 1996, and of those who would, some may have student teachers who did not wish to participate in the research project. The design of the study required that only five pairs of student teachers and cooperating teachers be formed. Additional staff members required for focus group data collection were drawn from those volunteers who were unable to participate in the full data collection procedure.

The investigator presented a research proposal to the school staff at a monthly staff meeting. This presentation informed the staff about the study in general, elicited their support for the study, and sought other volunteers for the research, should any

of the previously selected volunteers not be able to participate when the research commenced. Staff were asked to write a short note to the investigator indicating their willingness to participate and place these notes in her mailbox. Those who were selected to participate, based on the sampling criteria described earlier, received a consent letter to sign and return to the investigator (Appendix B).

The student teachers who were invited to participate in this study were part of a pilot project program for certification year secondary stream Faculty of Education students at a large Canadian university. This final year of study includes a large component of student teaching as part of the provincial teacher certification process.

All secondary stream education students at this institution who are in their final or certification year have the option of participating in the pilot project as long as they meet the project's eligibility requirements. Students apply for the program in February of their third year in education or in February of their first year in the After Degree program. Upon application for the program, students must provide a short history (beginning with their last year of high school) of educational attainments and activities which support the educational program goals of the pilot project. Once screened, those who are selected for this program are presented with a list of eight secondary schools, and are asked to indicate their first through third choices for placement during the student teaching portion of their certification year.

In March, principals (or their representative vice-principals) and the lead teacher (Appendix J) from the respective schools meet to review the student teacher applications. Representatives then select the students for their schools according to the number of students each school could accommodate and the students' stated choices. At the site where the research is to take place, fourteen students were requested by the departments; eight students were selected by the vice-principal and lead teacher. These selections were made based on the number of students each department could accommodate and the specific academic major and/or minor of the applicants. All students selected by the school where the research was carried out were informed of the potential for their involvement in the study at the time they were selected (Appendix C).

Potential student teachers were invited to an orientation meeting in the spring of 1996. This orientation meeting is a typical event with pilot project students in this school. Part of the agenda of the meeting was to outline this research project. Students were made aware that their participation was wholly voluntary and choosing to participate would in no way affect the outcomes of their student teaching experience in the school. After the presentation, students were given a brief written description of the study to consider through the summer. Those who chose to participate signed a consent letter in the fall (Appendix B). In the event that one of the student teacher informants proved to be a poor informant, or if an inadequate number of students volunteered, or if volunteers left the student teaching program,

then student teachers who were present at the site on similar placements, but who were outside of the pilot project, would be asked to participate in the study.

PARTICIPANTS

Following the sampling and entry procedures described, five pairs of cooperating teachers and student teachers were recruited to participate in all phases of the research. The cooperating teacher sample is summarized in Table 3. The student teacher sample is summarized in Table 4. The pairings for each of the student teaching blocks are summarized in the Table 5. Unless otherwise noted, these pairs participated in all data collection processes. Note that pairs are indicated by the numbers used in Tables 3 and 4.

In addition to the core of eight cooperating teachers and seven student teachers, four additional teachers (who met the entry criteria) volunteered to participate in the focus group data collection process, and three additional student teachers volunteered to participate in the focus group data collection process. Therefore, the total number of cooperating teachers who participated in the study was twelve, and the total number of student teachers was ten.

PILOT STUDY

The two data collection methods of audio taping the conferences, and the reflective notes of student teachers and cooperating teachers were tested with a cooperating teacher/student teacher pair in the spring of 1996. This preliminary exploration of

the methodology indicated first. the strong potential for the individual methodologies to provide rich data on the nature of the conferencing experience and second. the complementary nature of the data sets produced across data sources. This complementarity provided different kinds of information on the same conferencing experience. For example, in a discussion about a chemistry lab, the cooperating teacher was pointing out the need to modify some of the lab's contents to accommodate a weaker group of students.

CT: ...another thing you might have done, is done the lab one day and if you want them to do something, um, a little more complex in the analysis is you could just tell them, well, we'll go over some of the analysis and application questions, say, the next day...

ST: ...I was thinking about doing that and then I wasn't sure if I should do that, like, I didn't want it to be too easy...

This segment of the taped conference demonstrates coaching, and encouraging exploration by the cooperating teacher and articulation and reflection by the student teacher. The 32 minute conference between this pair frequently demonstrated the six teaching methods of the cognitive apprenticeship model throughout the episode. Written reflections from the cooperating teacher confirmed the framework and the need for effective communication between cooperating teachers and student teachers with:

I feel that this kind of dialogue is important. [The student teacher] needed to know that labs are an evolving kind of experience and the way in which they are carried out and the expectations of students may change. I also change the way I do labs and try to learn from each experience.

Table 3

Summary of Cooperating Teacher Demographics

<i>Cooperating Teachers</i>	<i>Gender</i>	<i>Grade Level</i>	<i>Subject Taught</i>
1 ~	F	7/8	flexible learning prog
2 *	F	7-12	L.A., English
3	F	9-12	Biology
4 *	F	7-12	Human Ecology
5 *	M	7-12	Art
6 *	M	7-12	Industrial Arts
7	M	7,8	L.A., social studies
8	M	9-12	Chemistry, physics
9	M	9-12	A.P. Chem, gen science

* indicates department head

~ indicates voluntary withdrawal from study

Table 4

Summary of Student Teacher Demographics

<i>Student Teachers</i>	<i>Gender</i>	<i>Major</i>	<i>Minor</i>
1 ~	F	Biology	Chemistry
2	F	Biology	Chemistry
3	F	English	History
4 *	F	English	Theatre
5 ^	F	Math	Geography
6	M	Physics	Chemistry
7	M	Geography	English
8 **	M	Geography	History
9 ^^	F	Family Studies	Foods

~ indicates student left the student teaching program in December 1996

* indicates student voluntarily withdrew from the study

^ indicates student left the school in November 1996

** indicates student left the student teaching program in October 1996

^^ indicates replacement student teacher - entry into study in January 1997

Table 5

Summary of Cooperating Teacher (CT) - Student Teacher (ST) Pairs *

<i>First Block (Nov-Dec '96)</i>	<i>Second Block (Mar-Apr '97)</i>
CT / ST	CT/ST
7 / 7	4 / 9
2 / 3	9 / 2
3 / 2	3 / 2
8 / 6	8 / 6
1 / 5 **	2 / 4 **

* *Pair numbers match individual participant numbers from tables 3 and 4.*

***indicates no audio-taped data collected due to subject withdrawals - see Tables 3 and 4*

The student teacher wrote :

[The cooperating teacher] reinforced the fact that as a teacher you need to constantly think of ways to improve your teaching. [The cooperating teacher] told me that he always reflects after he performs labs. He analyzes his labs to try to discover things that may help to improve them. This reassured me that as a teacher you never stop learning and growing. This interview showed me the importance of evaluation and reflection.

The student teacher also wrote that she felt more comfortable with her cooperating teacher after experiencing this conferencing episode as it provided her with "the opportunity to get to know him a little bit better". The pilot study illustrated that the complementary use of multiple data sources provides both richer data about a conferencing episode and opportunities for triangulation among data sources.

DATA COLLECTION

The complementary use of audio tapes, reflective notes and focus group methods was chosen based on preliminary informal investigation because, together, they elicited the necessary data to answer the research questions. They also would be the least obtrusive during actual data collection in that they capitalized on existing processes and would create a minimum amount of extra work for the participants. As the investigator is a member of the school's teaching staff, she was concerned about invading the participating teachers' physical and personal space and adversely affecting well-established, positive relationships between herself and members of the staff. During the informal methodology test, it was found that cooperating teachers were already spending time with the student teachers discussing aspects of their

preservice teaching abilities. Teachers were making notes about those discussions for themselves as record-keeping devices and future-direction documents for planning the next phase of the student's experience. As part of their program coursework, student teachers must keep a reflective journal while they are in the school during the student teaching experience. Therefore, the specific data sources chosen within the three-pronged methodology included:

1. **Audio-Taped Conferences** - An audio-tape of one conference per week between the cooperating teacher and student teacher during each week of the five week student teaching block was submitted to the investigator. Pairs chose which conference they would submit for each of the five weeks. Since conversations between cooperating teacher and student teacher pairs can become very personal in nature, the pairs had the choice of which conference would be taped and submitted for the investigator to use as a data source. It was not the intention of the investigator to collect data of a personal nature, but to collect data on the conferencing skills of the participants. On collection, each tape was identified by the researcher by means of a code which maintained the anonymity of each participant.

2. **Reflective Notes on the Taped and Submitted Conference** - These notes were written by the participants immediately after the conference took place and were collected regularly from the cooperating teacher and the student teacher. Reflections included the perceived value of the feedback, personal responses to giving and receiving feedback, and/or things to be considered during the next conference.

Participants were also invited to comment on how they felt data collection efforts

affected their conferencing. The investigator requested that participants submit copies of their reflections with the tape. These notes were identified by the researcher by a code to maintain the anonymity of each participant and to match the reflective notes with the submitted tape. The notes were retained for analysis.

3. Focus Groups - These sharing sessions took place three times throughout the duration of the study. The first took place near the beginning of October 1996, the second at the end of the first student teaching block (December 1996), and the last at the end of the second student teaching block (April 1997). These sessions were approximately one hour in length, and each group had between five and ten participants. The people who participated in the audio-taping portion of data collection participated in the focus groups. Other experienced cooperating teachers who were not participating in the full data collection procedure were also invited to participate in the study at this time. Student teachers who did not wish to participate in the audio-taping portion of data collection, or who were in the school outside of the pilot program, were also invited to participate in the focus groups. These volunteers were invited to participate in the focus group sessions at this time to replace participants who had withdrawn from the study. These sessions were held separately with groups of cooperating teachers and with groups of student teachers. The focus group sessions were held independently but occurred within one week of each other. Focus group data was collected by a recorder independent to the research study. The recorder was present during the sessions, and her primary responsibility was to record verbal and non-verbal responses to the questions presented by the investigator (Appendix F). In addition, the recorder noted

secondary observations, such as the perceived mood of the group, the group's apparent comfort level with the process and/or the questions, and other data judged relevant to the interactions of the group. The results of the focus group discussions were summarized by the researcher without reference to individual participants.

For each of the six focus group sessions, participants were arranged in a semi-circle, with the researcher sitting in front of the group. The recorder was sitting off to the side of the researcher, facing the participants, but out of the participants' direct line of sight. To help the researcher establish the context from which the participants were beginning the session, for each of the six sessions, the recorder was asked to note participants' behaviour as they entered the room. Name cards were arranged around the semi-circle of tables so participants would sit in specific seats. This seating arrangement was preplanned so that any participants who had been observed to be less participatory in other group settings in the past could be seated directly across from the researcher so she might be able to encourage their active participation in this group setting. In the second focus group sessions, the seating order of the participants was rearranged somewhat to support the researcher's goal of actively engaging all participants in the discussion. In the third focus group sessions, the seating arrangements remained the same as in the second focus group sessions.

DATA PREPARATION

The tapes were transcribed, verbatim, in short lines (45 characters or less) to facilitate coding. The transcriptions include notations indicating laughter, audible non-verbal communications such as, creaking chairs, interruptions by students or the public address system, and any other sounds which may have been picked up by the recording device. The data collected from the taped conferences was used as it existed, except for the editing of any references which might identify individuals in the setting. Each transcript was identified by participant codes, the date, and total length of the conference.

The focus group data recorded were summarized according to the questions asked and the responses which those questions elicited. Responses to each question were grouped by content and the number of respondents indicating a particular response was noted. Secondary observations, such as comfort level, mood on entry to and exit from the session, discussion topics before and after the session, were summarized in a similar fashion, noting categories as they applied.

DATA ANALYSIS

The data were analyzed using the constant comparison method. Briefly, the constant comparison method is a procedure used for coding data and simultaneously comparing all of the collected incidents. This categorizing and comparing of incidents was ongoing throughout data collection. Lincoln and Guba (1985) demonstrate options in this system as follows:

- strict inclusion - X is a kind of Y
- spatial - X is a place in Y, X is a part of Y
- cause-effect - X is a result of Y, X is a cause of Y
- rationale - X is a reason for doing Y
- location for action - X is a place for doing Y
- function - X is used for Y
- means-end - X is a way to do Y
- sequence - X is a step (stage) in Y
- attribution - X is an attribute (characteristic) of Y (p. 340)

However categories are derived, data is initially grouped on a 'feels right' or 'looks right' basis. "The investigator should not fail to draw on his or her tacit knowledge in making these judgments; errors made as a result of using such knowledge are correctable on successive review, but incidents recognized tacitly, once eliminated, are virtually impossible to recapture" (Lincoln & Guba, 1985, p. 341). The individual codes that constitute the coding grid were developed based on their ability to describe major themes expressed in the data.

As data collection and this type of analysis continued throughout the study, two kinds of categories emerged: those based on the congruency between the data collected and the literature on cognitive apprenticeship, and those which emerged spontaneously or naturally from the data files. This approach to developing the coding grid allowed data analysis to be linked to the previous research on cognitive apprenticeship but to remain open to new insights and findings grounded in the data. Thus, this process "stimulates thought that leads to both descriptive and exploratory categories" (Lincoln & Guba, 1985, p. 141). The descriptive categories are of two kinds: global and specific. The four global elements of the cognitive

apprenticeship model-content, methods, sequence, and sociology-were used first to group the data across the data files. A fifth global category, 'other', was included to allow for data specific emergent categories. When the global categories appeared to be rich in evidence, coding stopped temporarily so the investigator could begin writing memos on each category. The purpose of memo writing was to uncover the properties inherent in each category. In this research, the inherent properties were the specific characteristics in each of the global elements in the cognitive apprenticeship model (see Figure 1). However, other characteristics also emerged from the data. These emergent characteristics were labeled as analysis continued. The data were then re-examined to see if they exhibited the specific characteristics inherent in each of the four global elements and to derive the specific emergent characteristics within the 'other' category.

As the data began to fill each of the cognitive apprenticeship categories, the specific emergent categories were developed more clearly. This coding and analysis process provided a distinct integrative advantage over other analysis methods as it permitted the researcher to retain the elements associated with the enculturated nature of the study and to alleviate fidelity and bias issues. The words used by the participants in their specific setting were critical to maintain the highly situated nature of the data. By using this analysis method, all of the evidence gained by the researcher could be used and coded across the data files without losing the richness of the data in the participants' own words, including the focus group summaries and participant reflective statements. This analysis method allowed for the integration of many

points of view while comparing the data to each other, the *a priori* and emergent categories, and the methodology employed by the cooperating teachers while conferencing with the student teachers.

The product of this analysis method was a coding grid which identified themes and patterns in the data. The patterns and themes identified are summarized in Figure 1, the Conceptual Representation of the Coding Grid. The identification of patterns and themes was an ongoing process during data collection and coding grid development, and the final coding grid is based on the entire data set. This coding grid was then applied to each data file and data set to identify themes and patterns across the entire body of data. A 'data set' refers to the entire set of transcribed audio-taped conferences for any one cooperating teacher/student teacher pair participating in this study. A 'data file' refers to any one transcribed audio-taped conference in a data set. Four or eight data files could comprise a data set, depending on whether the cooperating teacher/student teacher pair remained the same from the first student teaching block to the second student teaching block.

Two of the three data collection methods provided preliminary evidence that the teaching methods of modeling, coaching, scaffolding, articulation, reflection and exploration in the cognitive apprenticeship framework are present and effective for communicating during conferencing episodes. The addition of focus groups and the researcher's reflective journal to the audio-taped conferences and reflective notes served to confirm and triangulate the preliminary findings. This methodology is

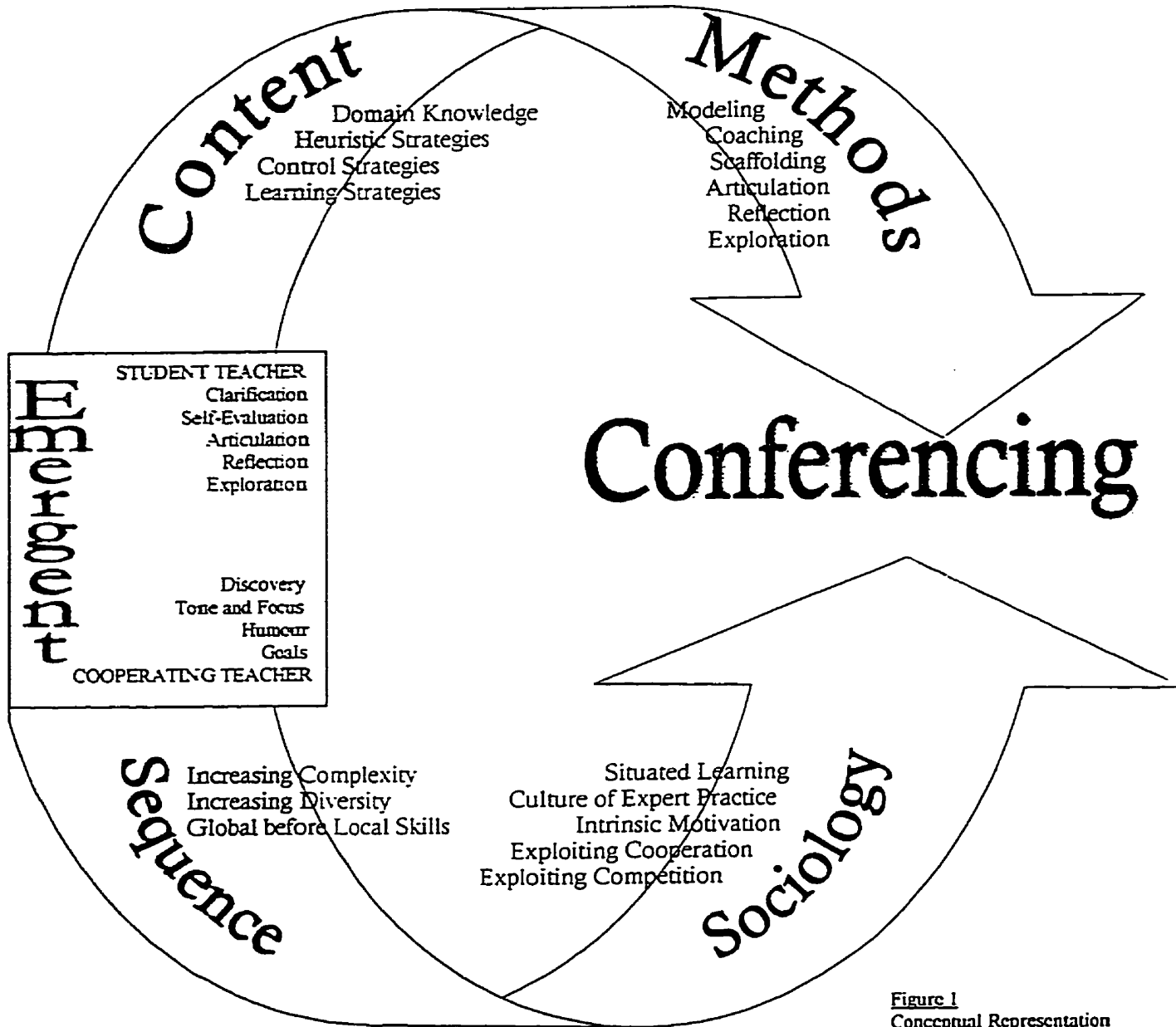


Figure 1
Conceptual Representation
of the Coding Grid

consistent with the cognitive apprenticeship framework in that it provided for learner discovery of new knowledge with a high level of activity during the learning in the culture in which the novice is seeking to develop expertise.

CODING GRID DEVELOPMENT AND APPLICATION

Development of the coding grid (Appendix E) for the transcribed audio-taped data files was a two-staged process. The initial grid was established by the global and specific *a priori* categories derived from the cognitive apprenticeship model of Collins, et al. (1989). The initial coding of the data files was carried out according to these definitions and was fairly straightforward. For example, when a cooperating teacher was offering hints or suggestions about a particular portion of a task performed by a student teacher, those lines of data were coded as M:C - 'M' for the global category Method and 'C' for the specific category called coaching.

The development of the grid required clear definitions of the *a priori* categories. These definitions were further clarified by the identification of a prototype example of each category. As clear examples of the categories were found in the data, these examples were transferred into the coding grid to illustrate the definitions of the category. As coding continued, some of the examples were replaced by other examples from different data files so that the grid would clearly illustrate how the *a priori* categories applied across all data files. Each example was identified with the appropriate cooperating teacher/student teacher pair numbers, the conference

number, the student teaching block in which the conference was taped, and the line numbers from the specific data file.

As straightforward as the coding appeared with the *a priori* categories, there were instances where the codes could not be applied, necessitating a second stage of coding grid development. These portions of the data were left uncoded and were maintained in a separate file until such time as a pattern or new category emerged. These emergent categories became apparent to the researcher approximately two-thirds of the way through the transcribed data. These emergent categories were initially grouped together under a global category of 'Emergent'. As these 'Emergent' specific categories began to define themselves more clearly according to similar themes, it became clear that the larger global category should be split into two subcategories: one which contained specific categories that applied to cooperating teachers only, and one which contained specific categories that applied to the student teachers only. These emergent categories were included in the coding grid following the *a priori* categories and were similarly defined and illustrated with prototype examples.

Since the 'Emergent' specific categories were not fully developed until approximately two-thirds of the data were coded, the researcher completed coding the last third of the data files with both the *a priori* and emergent codes, and then returned to the first data file to analyze and look for applications of the emergent categories

throughout the data to the point where the emergent categories were fully developed.

This two-staged development of the coding grid allowed an analysis based on the cognitive apprenticeship framework to test the usefulness of this framework for understanding the learning that took place during the conferencing between cooperating teachers and student teachers. It also allowed additional issues and strategies to emerge from the data to enrich the description of conferencing behaviours.

During data analysis, some of the global categories overlapped other global categories, and, similarly, some of the specific categories within a global category overlapped each other while coding some specific passages. For example, this statement from cooperating teacher 2 was coded CT: T/F and M:A. "[student teacher 3], we talked about some of the things that were going on this morning - do you want to respond to those?" (2/3;3;1;2465-2467)¹ The first code, CT:T/F, is an emergent code which identifies the passage as a Cooperating Teacher initiated Tone and Focus statement for this conference. The first part of this statement sets the atmosphere for the remainder of the conference. It was also coded M:A which identified the passage as an *a priori* Methods: Articulation passage. The last part of the cooperating teacher's statement was spoken to elicit a response from the student

¹ The information in parentheses following each illustration is a data file reference code : (2/3;3;1;2465-2467) means cooperating teacher 2 / student teacher 3, (the pair code numbers used in the references in this chapter and the coding grid match the pair code numbers in Table 5); conference 3; student teaching block 1; data lines 2465-2467.

teacher about her knowledge, reasoning and problem solving processes in regards to the issue from the class in question. An example of how the codes could overlap within a global category is illustrated by student teacher 7. This passage is coded Se:IC and Se:ID. "...whenever I wasn't, uhh, talking to them or discussing something with them, I was writing down notes for them and they were, they also had to take down these notes so they were always busy..." (7/7;2;1;1547-1551). The first code, Se:IC, refers to an *a priori* code which identifies the passage as Sequencing: Increasing Complexity. This category is reflected in the statement because the student teacher is referring to the number of teaching methods he used to capture his students' attention during the class. The second code, Se:ID, refers to another specific category within the same global category and identifies the passage as Sequencing: Increasing Diversity. This category is reflected in the statement because the student teacher refers to the different kinds of teaching methods he employed to capture his students' attention during the class. Many other examples with similar code overlaps could be found in the data.

ANALYSIS OF THE SECONDARY DATA SOURCES

The secondary data sources, the student teacher and cooperating teacher reflective statements and the focus group data, were analyzed to identify major themes within the data.

Reflective Statements

An open-ended reflective statement was generated by each cooperating teacher and each student teacher following each of the audio-taped conferences. These reflective statements were analyzed in cooperating teacher/student teacher pairs to determine emergent patterns across data sets and within data sets. The first round of analysis was conducted across data sets for each conference to see if common themes existed relative to whether the reflective statements were written for the first conference or the second conference, and so on. During analysis of each pair of reflective statements across data sets, emergent themes were separated into subcategories similar to the emergent categories from analysis of the audio-taped conferences: those which applied to the cooperating teacher reflective statements, and those which applied to the student teacher reflective statements. In the second round of analysis, reflective statements were re-analyzed within the data sets to see if patterns emerged as the relationships between specific cooperating teachers and student teachers evolved from conference 1 to conference 4 in each teaching block. In the third round of analysis, the reflective statements were re-examined across student teaching blocks to see if patterns emerged across the first teaching block and the second teaching block.

Focus Group Data

The data generated from each of the six focus group sessions were summarized by the researcher. Themes and patterns were noted along with the number of participants who agreed or disagreed with the statements made by the other

participants. The summaries of the data generated during the focus group sessions were analyzed to determine the major themes emerging from each session. Emergent themes from the first pair of focus group sessions, together with analysis of the first few audio-taped conferences and reflective statements, provided themes for further investigation in the second pair of focus group sessions. Similarly, emergent themes from the second pair of focus group sessions, and further analysis of the audio-taped conferences and reflective statements, provided themes for further investigation in the third pair of focus group sessions. For each session, the researcher had prepared four to five questions to ask each group. The questions were similar in theme but were altered in perspective depending on whether they were being asked of the cooperating teachers or student teachers. During several sessions, statements made by one or more of the participants led to additional questions being asked by the researcher. For an example of a focus group session summary, see Appendix F.

The Role of the Secondary Data Sources

Thematic comparisons were made between and among the secondary data sources, based on an analysis of the cognitive apprenticeship framework, to test the usefulness of this framework in examining the conferencing experiences between the cooperating teachers and student teachers. The reflective statements and focus group sessions enriched the analysis of the audio-taped conferences by providing illustrations of the tacit knowledge and thought processes of the participants in regards to the conferencing episodes and the cooperating teacher/student teacher relationship. The reflective statements served to situate the conferencing episodes in

the context of the participants' perception of their experiences, while the focus group summaries served to explicate those perceptions and confirm and evaluate thoughts and concerns across the individual groups of participants, relative to the conferencing episodes.

CHAPTER 4:

RESULTS

The results presented in this chapter illustrate the four global elements of the cognitive apprenticeship framework: content, method, sequencing, and sociology. These global categories and their individual specific categories constituted the *a priori* portion of the coding grid. In addition, descriptions and illustrations of the specific emergent categories, globally grouped as 'Emergent - Student Teacher' and 'Emergent - Cooperating Teacher' in the coding grid, follow the presentation of results based on the *a priori* categories. This reporting format reflects the organization of the coding grid.

CONTENT

Three of the four specific content categories, domain knowledge, heuristic strategies and control strategies were clearly demonstrated in all data sets. The exception, learning strategies, was demonstrated in four of the eight data sets.

Domain knowledge was illustrated regularly throughout all data files. "Domain knowledge includes the conceptual and factual knowledge and procedures explicitly identified within a particular subject" (Collins et al., 1989, p. 477). Domain knowledge was particularly evident during conferences one and two in each data set. For example, in a discussion about course content during the first conference in this data set, cooperating teacher 2 illustrated domain knowledge with "...particularly when you're teaching [subject x]. The more you can relate to other things they may

have read, the easier it is to get the message across.” (2/3;1;1;719-722)².

Cooperating teacher 3 illustrates this same category during a discussion of a dissection in the fourth conference with “...look inside and look at the layers and I’ve made them cut open the trachea so that they can actually see them...” (3/2;4;2;6008-6009).

Heuristic strategies also appeared throughout all data files and across all data sets. “Heuristic strategies are generally effective techniques and approaches for accomplishing tasks” (Collins et al., 1989, p. 478). They tend to be acquired tacitly through immersion in the community of practice. For example, in a discussion revolving around a minor discipline issue, cooperating teacher 7 articulates heuristic strategy knowledge with “That’s when they’re causing trouble. When you begin a class, you should give your instruction within 30 seconds of coming into the room.” (7/7;1;1;108-110) Heuristic strategy knowledge was also illustrated by cooperating teacher 4 in a discussion about when to schedule a test for a particular class. “...the high school is having a test. That’s the last day before spring break - they’re not going to like that.” (4/9;1;2;3441-3442). In both of these examples, the tacit knowledge articulated by the cooperating teacher about student behaviour was learned by the cooperating teacher as a result of being immersed in the culture of practice.

² The information in parentheses following each illustration is a data file reference code : (2/3;1;1;719-722) means cooperating teacher 2 / student teacher 3, (the pair code numbers used in the references in this chapter and the coding grid match the pair code numbers in Table 5); conference 1; student teaching block 1; data lines 719-722.

Control strategies appeared across all data sets but were less frequently evidenced than domain knowledge or heuristic strategies, and did not appear in each data file. Control strategies refer to the level and type of awareness of the process of carrying out a task. They are the management systems for conceptual and factual knowledge and their application in future situations. Cooperating teacher 2 clearly illustrates the importance of learning control strategies in a discussion about the apparent disorganization of her student teacher during a particular class.

The one thing I would suggest you really need to do some work with is-I shouldn't say organization, but the impression of organization. You quite often look like you don't know what you're doing next. And that could be that you don't know what you're doing next or it could be that you're just not giving the impression. The more you can present to the students that you are organized, the more credibility you will have with them (2/3;1:1;757-764).

Cooperating teacher 8 illustrates this same strategy in a similar discussion about his student teacher's inability to create smooth transitions during a lesson.

What you would do, for example, is be talking about something and then, ahh, it's like, you know, like you're thinking about what to do next or looking at something on the tables though you're looking for what's the next step in the lesson and the kids are just sort of not sure what to expect at that point (8/6;1;1;1147-1150).

In both examples, the cooperating teacher was pointing out how important control strategies are both for organizing the information to be taught and for choosing and monitoring the processes used to teach that information.

Learning strategies were the least frequent category of specific content categories found in the data files, and did not appear across all data sets. Learning strategies

refer to knowledge about how to learn. The strategies range from general strategies for acquiring new knowledge to local strategies for extending or reconfiguring knowledge for transfer to a new situation. During a discussion about goal setting and action plan formation, cooperating teacher 4 tried to drive home the point that even experienced teachers who wish to continue to grow and develop to become better teachers need to be aware of their goals - whether short or long term. "The reason I'm saying it is that teaching is not necessarily something you excel at when you're finished!" (4/9;2;2;3733-3735). Cooperating teacher 8 illustrated this same strategy when he was providing his student teacher with a means to help students 'learn to learn' when they answer questions incorrectly.

...so what I would've done is write the equation out - (pen scratches on paper, and there are pauses as he is writing and modeling the process for the student teacher) ammonia + water gives ammonium ion + hydroxide ion and then I would persist with her. I would've said 'Well, the ammonia - is it acting like a base or an acid?' and you ask her that and she has a 50-50 chance of getting it right (both are laughing now). I think in that case she would've said 'base' and then with the water - 'If the ammonia is acting like a base, then what is the water acting as?' and then she would probably say 'acid' and then you're next comment would be to enthusiastically cheer her 'Way to go! Way to go!' (both are chuckling again) (8/6;2;2;6469-6478).

This format of instruction continued for the other side of the equation under discussion. It is the way in which this cooperating teacher approached operationalizing this tacit instructional technique for the student teacher that qualifies it as a learning strategy. In this way, an example of how to teach students how to learn also becomes an illustration of teaching the student teacher how to learn. Not only was he explaining a technique of instruction for the student teacher to use, but he was modeling the process for the student teacher to make the

instruction clearer. The injection of a little collegial humour helped the student teacher see how to use this instructional process in the future.

METHOD

Five of the six specific method categories-modeling, coaching, scaffolding, articulation and reflection-were demonstrated across all data sets. The exception, exploration, did not appear in a data set until the second student teaching block, and then only in three data files.

Modeling was evidenced in all data files under a variety of conditions, but particularly when a cooperating teacher was trying to draw attention to an implied aspect of his/her own instructional techniques to a student teacher. While constructing an outline of a weekly plan, cooperating teacher 4 demonstrated why she had written her own outlines in the way that she had, not only by drawing attention to physical examples but by this passage: "...should be writing in pencil because we'll probably be changing it again because of inservices and stuff and that's why I say outlines are just a guide and then things happen in between" (4/9;1;2;3455-3458). In a discussion about what to do about students who skipped a lab activity, cooperating teacher 3 modeled both the tone and words she would like the student teacher to use to establish her authority in the class. "Yup, I would just say, 'Sorry, you missed your lab marks and that's it. It's going to be reflected in your unit mark and maybe next time you do a lab you might show up'" (3/2;3;1;1683-1686). This portion of the dialogue took place because the student teacher was

feeling like she had been taken advantage of after she had waited through her lunch hour for the students to make up their missed lab.

Coaching was the easiest category to recognize and was the most frequent category throughout all data sets. Coaching could range from one or two words of gentle encouragement to drawing direct attention to a mistake and suggesting a better way to accomplish the task. In a discussion about adapting some activities from a book to a specific class, cooperating teacher 9 is careful to remind his student teacher to highlight the connections between what was taught theoretically and the activity that the students would be performing. "You'll want to emphasize that as you go along"(9/2;1;2;4489). While trying to help his student teacher find a way to convince his class to do homework for him, cooperating teacher 7 suggests

...once they can do 5, 10, 15 minute assignments in the time you've allotted and hand it in and once they can do that on a regular basis without any problems, then maybe we can start saying, 'OK, here's some additional questions we expect you to do on your own at home.' (7/7;3;1;2348-2353)

In both examples, the cooperating teachers provided the student teachers with suggestions about how to make the most of their teaching experiences in their respective classrooms.

Scaffolding was evidenced in all data sets, but not in all data files. It tended to coincide with either implied or direct student teacher activities as the student teacher may have expressed some hesitation in performing a task without support from the cooperating teacher. In this discussion about starting a new unit near the end of the

first teaching block, the student teacher had expressed her concerns about her lack of content knowledge in the area to be taught. Cooperating teacher 2 responded with "...maybe we can do it together even if I sort of run it, we can work together on it" (2/3;3;1;2752-2753). During a discussion about physically setting up a lab to accommodate a dissection activity, cooperating teacher 3 was trying to model how to efficiently cover the material while orchestrating the actual activity. Cooperating teacher 3, realizing at a point during this discussion that the student teacher may not be able to handle completing this activity in the shortened class period, offered, "No, it does work - honest. I'll just show them if you want, with one example when it comes to that point in the class and then the rest can just do it cuz it's not hard to do." (3/2;4;2;5947-5950) In both examples, the cooperating teacher intended to use a team approach to teaching the material with the student teacher.

Articulation was demonstrated in all data sets and all data files. Many methods were used by the cooperating teachers to elicit student teacher knowledge, reasoning or problem solving processes in their particular domain. These methods ranged from simply asking direct 'What do you think' questions, to a more subtle strategy of not finishing a sentence with the hope that the student teacher would offer his/her thoughts. During this opening statement to a conference, a cooperating teacher offered the direct approach "...first is to ask you to give your impressions of how the lesson went and especially emphasize the positive points." (8/6;3;1;2098-2900) A more subtle example was illustrated in the data when cooperating teacher 3 probed to find out whether her student teacher realized that during a small group activity

some individual group members did not copy down some test results from the lab they performed: "...is what it amounts to so it'll be interesting to see the results (chuckling while talking) he comes up with ..." (3/2;1;1;336-337). In both of the examples, the cooperating teacher's intent was to provide the student teacher with an opportunity to express his/her knowledge, reasoning or problem solving processes regarding the decisions he/she made during the classroom activities.

Reflection, though evidenced across all data sets, did not appear across all data files. Reflection was unlikely to occur in early conferences, although it did appear sporadically. When questions or comments from the cooperating teachers did not elicit reflective responses from the student teachers, cooperating teachers tended to stop asking those types of questions in early conferences. Reflective statements were made by the student teachers in direct response to reflective questions during the fourth conferences in the first teaching block. Moreover, more frequent episodes of reflection appeared in the second teaching block than in the first teaching block conferences, particularly where the cooperating teacher/student teacher pair remained the same from the first student teaching block. An example of where the student teacher was unable to respond in a reflective manner occurred when, in their first conference, cooperating teacher 7 asked "...what criteria are you using to come to that conclusion?" (7/7;1;1;71-72) after the first reflective question failed in an attempt to elicit a more comparative response than 'It went well'. During a large-scale scaffolding exercise related to developing a unit test, cooperating teacher 9 asks, "so you're thinking about what to put on [the unit test] and also how to ask?"

(9/2;2;2;4956-4957) to check if his student teacher had given any real thought to the structure and format of the test. In both examples, the cooperating teachers were trying to elicit responses from the student teachers which would compare the student teacher's thinking processes with that of an experienced teacher.

As mentioned in the introductory paragraph to this section, exploration did not appear in direct statements from the cooperating teachers under many circumstances. It appeared mainly in the second teaching block, and two of the three occurrences were with the same pair in the same data file. For example, in a direct question from cooperating teacher 9 about the possibility of canceling a field trip, he asked the student teacher, " So what do you think you'll do? " (9/2;3;2;5006) hoping that she had a back-up plan in case the field trip had to be canceled. An example from the other data file where this category appeared is during a discussion around a dissection activity when cooperating teacher 3 tried to find out how much of the task her student teacher was willing to attempt on her own. "So what did you have in mind for a dissection lab?" (3/2;3;2;5862) It was not surprising that there was little exploration in the first student teaching block, since exploration implies independent practice. It was surprising, however, that it did not occur more frequently in the second student teaching block. When it did occur in the second student teaching block, it occurred between cooperating teacher/student teacher pairs which remained together from the first student teaching block.

SEQUENCING

Though episodes of all three specific sequencing categories-increasing complexity, increasing diversity and global before local skills- were evidenced across all data sets, the sequencing of events appeared more often as an implied series of outcomes of classroom activities rather than direct statements. According to the cognitive apprenticeship model, the cooperating teacher should direct tasks and task environments to gradually change in complexity and diversity to reflect the changing skill levels of the student teacher. In the conferencing episodes analyzed, it was usually through an 'articulation' narrative by the student teacher that evidence of any of the specific sequencing categories took place during the student teaching experience.

Increasing Complexity was demonstrated in one data file during a discussion about how the student teacher could pace a lesson so that the transitions within the lesson would create continuity for the students. Cooperating teacher 8 said, "Yeah while they're working, think ahead about what you want to do next so that there isn't that spot that they're not doing something." (8/6;2;1;1360-1362) In an instance where scaffolding was involved in changing the complexity of a task, cooperating teacher 2 suggests, "maybe we can do it together even if I sort of run it, we can work together on it." (2/3;3;1;2752-2753) In both examples, the cooperating teacher was suggesting that the student teacher should incorporate more skills and process knowledge to accomplish the teaching task.

Increasing diversity was evidenced in a conversation between pair 9/2. Student teacher 2 was 'thinking out loud' about options for how she might wrap up the section she was teaching at the time and connect it to the next section " ...depending on how much time I have, I could start going into the next part which is Big Change Big Web, or maybe I should start talking about the decomposition part, you know, the composting and applications and that?" (9/2;1;2;4380-4384). During the fourth and final conference between pair 7/7, the student teacher was asked to reflect on the positive and negative aspects of his student teaching experience. In attending to one positive aspect in learning to keep the middle school class on task, he credits the variety of activities in any one class as having a positive impact on the learning for both the students and himself

I think that was a big part of it, uhh, another big part I think was getting a lot of variety in there - there were a lot of different tasks. One day I would work with the overhead and have them working with me and copying down the same notes, so they were kept busy that way. Whereas another day we would do questions - where they would do a worksheet looking through the textbook for answers to the questions on the sheet. Another time we would be doing the same sort of thing but with a video. I think the variety also kept them busy, whereas they weren't doing the same task every single day, getting bored with it (7/7;4;1;2861-2872).

In both examples, the student teachers were implying that incorporating a variety of options, related skills, content knowledge, and heuristic strategies had created a richer learning environment for their students and themselves.

The strategy of global before local skills was demonstrated during a discussion in which the cooperating teacher had asked the student teacher to reflect on his five

week student teaching block. The reflection was requested in terms of skills gained and then skills yet to be acquired. In describing one of the skills he still needed to work on, the student teacher talked about planning. He seemed to feel he was competent in planning the larger components of a unit and how those items fit into the unit plan, but he was still having difficulty planning for the individual items within the components of the unit

...the planning comes to mind. I know that sometimes ...at the beginning I was writing out everything all the time and as I got close to the end, I wasn't doing that as much...and some things I tended to get a little lost myself,... (8/6;4;1;3053-3058).

A rare example of a cooperating teacher-directed reference to getting the 'big picture' first, was illustrated by cooperating teacher 4 while discussing the necessity of assuming students know absolutely nothing about the safety issues involved in the course. "What might be a good idea, uhh, when you do this one is to set up a lesson plan and we'll talk about how to set up a lesson plan, for both labs and for a lesson" (4/9;1;2;3548-3551). In both examples, the focus was on acquiring an overview of the skills and processes to be learned in order to develop a conceptual map for the task as a whole. Specific skills for executing the processes would be taught after the student teacher had developed such a conceptual map.

SOCIOLOGY

Three of the five specific sociology categories, situated learning, culture of expert practice and intrinsic motivation, were illustrated across data sets. Exploiting cooperation and exploiting competition were not evidenced anywhere in the data.

Situated learning was illustrated in at least three out of every four data files in each data set. Situated learning occurs when student teachers carry out authentic tasks in an actual practice setting, reflecting the multiple uses to which their knowledge will be put in the future. As student teachers became more familiar with the culture in which they were learning, they began to articulate more and more situations where present or past learning would be applied in the future. During a conversation regarding the need to make the theoretical coursework more concrete for a lower level class, student teacher 2 offered a response to a question from her cooperating teacher about what she had learned from the experience: "...but I try to do as much visual [teaching] as possible, but I thought that was visual enough and now I realize you need more." (3/2;1;1;446-448) From the same pair, during the first conference of the second teaching block, evidence of situated learning was illustrated again but with a different point of application. The student teacher was articulating how she dealt with a school week of only two days instead of five but still managed to get through the core material to meet curricular needs. "I think more than anything what I did is I gave them more homework, more textbook reading, I didn't give them as many notes, I didn't go through as much material myself with them" (2/3;1;2;5444-5447). In the first example, the student teacher suggests that, if faced with a similar situation, she will do things differently. In the second example, the student teacher did do things differently after experiencing a similar situation in the previous week. Both are illustrations of learning that took place through active participation in practice.

Culture of expert practice was demonstrated across all data sets and tended to appear by the end of the first conferences. Culture of expert practice is expressed when student teachers "...actively communicate about and engage in the skills involved in..." (Collins et al., 1989, p. 488) the practice of carrying out tasks in the domain. Student teachers were asked to articulate (in one way or another) something that may have taken them by surprise during the course of their early experiences in the class. During this conference, the cooperating teacher (who had been away for the past two days) asked if things went 'OK' in her absence because the substitute had not left many details. It seems that the student teacher had a trying experience with a group of students because of her attitude towards trying to control their behaviour.

... I was resolved to come back the next day, be lighthearted, and have fun and not try and control everything so much and have everything under my finger and it worked! I trusted them and they trusted me right back! (4/9;2;2;3809-3813).

In an early conference, student teacher 3 was concerned about how to deal effectively with the tardiness of a large number of students in one particular class. She seemed to be confused about who was supposed to be controlling the class - her or the students. " This group, you're not even sure when to begin because there are so many drifting in here and there" (2/3;1;1;664-665). In both examples, the student teachers were communicating about issues that could only be shaped by the culture in which they existed. These portions of the conferences do not have contextual meaning outside the practice teaching setting.

Intrinsic Motivation was evidenced across the data sets; however, rarely was it illustrated before the third conference in any one set. Moreover, when it was illustrated, it was seldom demonstrated more than once in a data file. In the first teaching block, it appeared more so in relation to discipline issues. In the second teaching block, it was evidenced in relation to global curricular issues. For example, after having been taken advantage of one too many times by a particular class, student teacher 3 finally gained control over the issue by demanding assertively that homework be turned in by a certain date or no marks would be granted. "I get the impression that they felt they could get away with stuff they couldn't get away with, with you, so I thought 'That's it! End of story!' " (2/3;1;1;686-688). The goal here was for students to produce evidence of the learning that should have been taking place, if for no other reason than the student teacher needed to be learning herself. An example from the second teaching block was illustrated when student teacher 2 was trying to articulate how she was going to tie a number of concepts together to develop a larger theme within a unit.

The most important thing is for them to understand these main concepts there of, where is it, decomposers, consumers, producers, predators, autotrophs, that's the main idea so that's what I want to key them into, so, I mean, I'll read it over in more detail but if I can get these ideas across by doing something like this well then, all the better... (9/2;1;2;4492-4498).

The objective in this second example was closer to the definition of the category. The purpose of tying the concepts together was to provide the students with their own conceptual map. In this case, the motivational factors were an appreciation of

the roles of every living thing in the environment and how skewing any one of those things affects the life cycle of everything else.

As stated in the introduction to this section, no direct evidence was found to support the exploiting cooperation and exploiting competition categories, perhaps because there are few formal opportunities for student teachers to work together in the school setting. However, during the third conference in the second teaching block between pair 9/2, a statement was made by the cooperating teacher that implied he had learned how to apply some teaching techniques in his content area that he would not have considered had he not seen the student teacher have so much success with them. He said he would continue to use the 'alternative' techniques after the student teacher had completed her student teaching block. Cooperative learning and process comparison did take place, just not between student teachers. Instead, it occurred to a certain degree between a cooperating teacher and a student teacher.

EMERGENT CATEGORIES

The emergent category codes are grouped in two sections in the coding grid. The first group corresponds to categories which relate specifically to student teachers. The second group corresponds to categories which relate specifically to cooperating teachers.

Student Teachers

Five categories emerged during data analysis and were present across data sets. The specific categories were; clarification, self-realization, articulation, reflection and exploration. The articulation, reflection and exploration categories used here are different than those incorporated into the *a priori* global Method category of the coding grid because these passages tended to occur without the appropriate prompting from the cooperating teacher. For example, a cooperating teacher may have asked a student teacher a question which should have elicited a reflective response. The response from the student teacher did not match the intended outcome of the question. In many cases during analysis, articulation, reflection and exploration, comments were not made by the student teachers as a direct result of cooperating teacher initiated questions or comments and, therefore, reflected not a teaching method, but a student teacher-initiated section.

Clarification tended to emerge in later conferences (usually in the third conference) in each data set, and it occurred more frequently in the second teaching block than in the first teaching block. Clarification was illustrated whenever a student teacher asked for more information about a particular issue during a conference. During the first conference between pair 3/2, the student teacher asked for clarification. " Yeah ...I wasn't sure about that...cuz I was wondering about that...(cooperating teacher cuts her off)" (3/2;1;1;294-295). During a conference about student presentations, the cooperating teacher was trying to explain how to challenge students more during this type of activity by asking them different kinds of questions . The student teacher

was unsure about how to word the questions and, she said, "So are you saying... " (9/2;1;2;4623). In both examples, the same student teacher is speaking, but with different cooperating teachers. Moreover, the difference in her level of confidence while asking for clarification in the first teaching block compared to the second teaching block is notable.

The self-realization category appeared across all data sets. Its first appearance in each data set was accompanied by some 'negative' emotion, whether this emotion was demonstrated by the tone of the student teacher's voice or by the sudden change in speech pattern or by heavy breaths or sighs. There appeared to be a collision between the student teacher's initial confidence level and the realities of practice. It was as if, at that exact moment, the student teacher had the wind knocked out of his/her sails. After this initial instance of emotional self-realization, self-evaluation episodes became very matter-of-fact. For example, during a long assessment of some discipline issues in his student teacher's class, the cooperating teacher was very direct about the problems and offered some possible solutions. The student teacher's only responses during the lengthy assessment consisted of 'yeah' or 'mm-hmm' until the cooperating teacher was finished assessing the student teacher's skills and behaviours. In the final response, the student teacher began with a deep breath and, upon exhaling, said, "OK" (7/7;1;1;152), as if to finally concede that he still had some skills to acquire. During a different pair's conference, in one long passage, the cooperating teacher was explaining to the student teacher how her subject matter knowledge and questioning techniques were not going to improve overnight. The

student teacher responded with "OK. (very meek - almost deflated)" (2/3;2;1;1972)

By the time the student teachers were beginning their second teaching block, their ability to be self-critical became more a matter of course. In this conference, the cooperating teacher asked the student teacher to talk a little bit about his impressions of a particular class. During the student teacher's articulation of the events, he said he was having some difficulties and even offered a reason for why the difficulties existed. "...there's just sometimes when I think, when I'm asking questions that they aren't really responding - I think that might be because I'm asking too many redundant questions." (8/6;1;2;6187-6190) In the later example, the assessment of the performance is just that-critical self-assessment and not a general attack on the self.

Articulation appears across all data sets and typically was evidenced in each data file. The first examples of this category appear in early conferences in each data set as a response to the first attempts of the cooperating teachers to elicit reflective statements from the student teachers. The articulation responses from the student teachers seem to be a necessary part of the progression towards reflection. For example, in an early conference, cooperating teacher 3 asked about a particular student's work habits during a class and the student teacher provided a straightforward response. "...and then I realized after, you know, that he wasn't doing it even though he was in the group." (3/2;1;1;332-333) In later conferences, articulation passages began to incorporate the elements of situated learning as the student teacher moved towards reflection about his/her action and tasks in the

classroom. In this example, cooperating teacher 8 had asked for the student teacher's opinion on which of his skills he had improved over the five week teaching block, and the student teacher's response illustrated how he was beginning to see the learned skills as having a place in future situations. " I tried to keep the lesson going and get the kids to work instead of putting something on the board. I had them do the work instead of answering the question myself." (8/6;4;1;3014-3017). In both examples, the student teacher provided a synopsis of classroom activities. The second example incorporates an implied statement of how skills learned in the past were applied to a new situation. In both cases, the student teachers' responses were not prompted by a question or comment from the cooperating teacher specifically designed to elicit an articulation response.

Reflection appeared across all data sets, though not in each data file. During the first teaching block, reflection was evidenced most frequently in later conferences. For example, when asked to do some 'quick thinking' to summarize what he had learned through the five week teaching block, student teacher 7 responded with, "...I think the progression was there as well - the same sort of thing, as you mentioned many times, it's just a matter of keeping them busy.." (7/7;4;1;2851-2854) as he compared his performance to what he saw his cooperating teacher do. Reflection was evidenced throughout most data files in the second teaching block as the student teacher often compared him/herself to observed expert behaviour. Cooperating teacher 9 asked a question about a series of activities the students performed, and the student teacher's response included a comparison to expert thought processes about

the purpose of those activities. "That was for habitat - for them to discuss the differences for habitat and niche - cuz it's really easy for them to get those two concepts confused" (9/2;2;2;4727-4729). In both examples, the student teacher compared his/her thought processes for the task he/she had performed to those of an expert. In both cases, the student teachers' reflective statements were not prompted by a question from the cooperating teacher which, by design, would have elicited a reflective response.

The last emergent category, exploration, was evidenced in all data sets but was not present in every data file. In the first student teaching block, it appeared only during the fourth conference in each data set. Frequently, exploration was evidenced when there were two or three classes left in the first teaching block and the student teacher was looking for quick activities to experiment with before Christmas holidays. In a discussion between pair 2/3 about what to do in the last few classes, cooperating teacher 2 said that she would just begin the next unit if student teacher 3 finished her unit before the last day of the teaching block. Student teacher 3's response was, "Actually I wouldn't mind trying that - I haven't had much experience with it [the new unit subject]." (2/3;4;1;2754-2755) In the second student teaching block, this category was considerably more student teacher initiated. Exploration of a part of the curriculum was usually about testing a previously untried teaching technique. The cooperating teacher asked the student teacher to articulate her planning for the next section of the curriculum, and the student teacher responded with, " have you ever done a lung dissection? I saw it done in one of my courses, and I thought it was

fascinating!" (3/2;1;2;5545-5547). In both examples, the student teacher requested new task exploration. In both cases, the student teacher's request for a new task or teaching strategy was not prompted by the cooperating teacher.

Cooperating Teacher

Four categories emerged during data analysis with respect to the cooperating teacher role. The specific categories were goals: humour, tone and focus and discovery. Two of the four categories, humour and tone and focus, were present in all data sets.

Goals and roles regarding the cooperating teacher-student teacher relationship and the student teaching program were outlined by two of the four cooperating teachers in early conferences during the first student teaching block. For example, "...another thing I see my role as, is helping you to select material and give you some ideas..." (2/3;1;1;633-634). Goal discussion during the second student teaching block took a slightly different focus. Cooperating teachers supported student teacher developed specific goals to work towards, particularly when the cooperating teacher/student teacher pair remained the same from the first teaching block to the second teaching block. "That's one of the major things I want you to work at this second time around. " (8/6;1;2;6211-6212). In the first example, the cooperating teacher began a discussion about goals and roles within the context of the cooperating teacher/student teacher relationship. In the second example, the cooperating teacher drew attention to a specific skill that the student teacher had difficulty

learning in the first teaching block. In both cases, the cooperating teacher initiated the discussion about goals.

Humour was illustrated in all data sets but not in all data files. In the first student teaching block, it was used by the cooperating teachers to soften critical comments about observed student teacher performance. In this example, to provide some comic relief to the criticism, the cooperating teacher began the critical analysis by exaggerating the outcome of some discipline problems in the class to emphasize the point that the student teacher must find a solution to the problems. The final statement in this narrative elicited a chuckle from the cooperating teacher as he was explaining what he had observed.

...sometimes you will start talking to the group and it's clear that you don't have everyone's attention. In fact, the radio might even still be playing (chuckling). So, turn off the radio, close the door and make sure you've got everyone's attention before you give the introduction (still chuckling).
(8/6;2;1;1406-1411)

Humour was evidenced in a more 'collegial' fashion across all data sets in the second student teaching block. It was illustrated during a long and somewhat animated narrative about specific procedural domain knowledge between pair 3/2. " ...invariably they do not know because the atria are that tiny. The ventricles are that big and so they're looking for the atria down by the ventricles (hearty laughter from both)" (3/2;4;2;5968-5972). Using humour as a teaching tool and to relieve tension during discussions when criticisms could have been misinterpreted by the student teachers became useful to all of the cooperating teachers. Unfortunately,

only four of the eight cooperating teachers were able to experience the 'collegial' form of this category.

Tone and focus statements were evidenced across all data sets and files and typically were made at or near the beginning of each data file. These statements set the atmosphere for each conference. The statements were more general in early conferences than in late conferences. Cooperating teacher 7 illustrates the general format with "How did you feel about today's lesson?" (7/7;1;1;55). Cooperating teacher 8 illustrates a later, more specific statement. "The main topic of the class was acid nomenclature and formulae and the use of KA's in solving problems. So [student teacher 6] if we can focus on the acid nomenclature part of the class." (8/6;1;2;6108-6111). The tone and focus statements became quite general again in the fourth conferences of the second teaching block. "First we're going to talk about the unit test tomorrow and then generally review the past five weeks." (9/2;4;2;5287-5289). The tone and focus statements helped to keep the conference participants focused on the topic(s) which needed to be discussed.

Discovery was only present in two data files, each of which was part of a different data set. The first instance of discovery occurred when cooperating teacher 7 was observing his student teacher and participating in an activity with the students in the class. He learned something about one of the students which took him by surprise. "Uhh, so I would nudge [student A], and 'oh' and he would think back and he had a fantastic memory...I couldn't believe it!" (7/7;1;1;177-179). The second illustration

occurred in the second student teaching block with a different cooperating teacher/student teacher pair. This example involved a point of discovery about using 'alternative' or non-traditional teaching methods in this particular content area. In an earlier conference between pair 9/2, the cooperating teacher spoke several times as if he was in a state of shock that his student teacher was going to use methods x, y and z to teach the content in the first place. In the third conference between the pair, the cooperating teacher made these comments:

...the experience on the Internet and you've had them up 2 or 3 times giving presentations and I think that's good. I noticed today that they weren't fussing about having to do presentations like they were the first time you said they were going to. That's good. They've gotten into a little bit of a habit there - I'm going to try and keep that going. (9/2;3;2;5267-5274)

and, at the end of their fourth conference, "I just want to say officially. on tape, that I'm really glad you were here this semester, and I think the kids really enjoyed your teaching." (9/2;4;2;5403-5405). It would seem that the collective learning experience was beneficial to everyone.

The emergent student teacher categories-clarification, self-realization, articulation, reflection and exploration- and the emergent cooperating teacher categories-goals, tone and focus statements, humour and discovery-support and help to situate the global and specific *a priori* cognitive apprenticeship categories in the context of their use. The situated and contextual nature of the conferencing is illustrated further by the secondary data sources, the cooperating teacher and student teacher reflective statements, and the focus group data.

Major themes present in the cooperating teacher reflective statements

The reflective statements provided by the cooperating teachers for each audio-taped conference typically included a tone and focus statement and a paragraph summarizing what was discussed in the conference regardless of teaching block or conferencing episode. The tone and focus statements made in the reflective statements were consistent with the tone and focus statements present in the conference data files. For example, "...aim of discussion - organization of the lab - physical set up, ways to improve, instructions, follow-up..."(3/2;1;1)³. This statement is consistent with the discussion between pair 3/2 during the first conference in the first teaching block. The cooperating teachers' reflective statements across teaching blocks and across data sets showed concern for student teacher growth, listed suggestions to assist student teacher skill acquisition and performance, and stated that the conferencing episodes were beneficial experiences to both the cooperating teachers and student teachers. Two of the four cooperating teachers continuously referred to themselves and their student teachers in plural form when reflecting on the conferences. For example, one of the two cooperating teacher's reflective statements always began with "What we did" (7/7;1;1). It was notable that this 'team' approach to supporting the growth and development of the student teacher in each of the two pairs, was consistent with the two student teachers' reflective statements - they also referred to themselves and their cooperating teachers as a 'team', or 'we did....'. These two pairs of cooperating

³ Reflective statement reference code: 3/2 refers to the cooperating teacher/student teacher pair, matched from Table 5: 1 refers to the reflective statement from conference 1; 1 refers to teaching block 1.

teachers and student teachers also wrote positive comments about the rapport between them as early as the first conference reflective statements.

Early conference reflective statements were characterized by summaries of what was discussed in the first and second conferences, and particular emphasis was placed on the strategies that cooperating teachers were trying to convey to the student teachers during the conferences. For example, "We discussed organization and time management. She seemed receptive to my suggestions and I have seen an improvement, a real attempt to incorporate the suggestions I've made" (2/3;1;1).

Generally, reflective statements from subsequent conferences had follow-up statements which referred to the strategies imparted in previous conferences. When cooperating teacher reflective statements were analyzed within data sets, the conferences appeared to have reflective 'connective tissue'. The supervisory process had a certain directed nature - the reflective statements read like lesson plans, and the data sets took on the appearance of unit plans.

Attention to the effects of audio-taping also characterized early reflective statements. Oddly, only two cooperating teachers mentioned the tape recorder in the first set of reflective statements in the first teaching block. One found it "intimidating" (7/7;1;1) and felt that the discussion between him and his student teacher sounded unnatural as he was listening to himself during the discussion. The other cooperating teacher thought the presence of the recorder was "strange" (3/2;1;1). Reflective statements submitted for subsequent conferences during the first teaching

block made reference to the tape recorder, but the presence of the recorder was becoming less intimidating. By the third and fourth conferences in the first teaching block and throughout the conferences in the second teaching block, no mention of the recorder was made even by the cooperating teachers who were not part of the audio-taped data collection process during the first teaching block.

Reflective statements submitted for the third and fourth conferences during the first teaching block were shorter than the others. A wide variety of comments were made in these statements ranging from the positive aspects of their student teacher's growth and the skills he/she still needed to achieve to statements about reassuring their student teachers in moments of near crisis. Cooperating teacher 2 expressed her concern about how the reality of practice was causing her student teacher undue stress and the difficulty she was having trying to relieve her student teacher of some of that stress while still presenting her with the realities of practice. Cooperating teacher 7 made a positive statement about how a discussion with his student teacher about the difficulties of working with middle school students and the necessity of teaching the students so many other things besides course content led him to discover that they both needed to "re-evaluate our ideas on what motivates students and how we can get them to want to work" (7/7;3;1). The diverse nature of the topics discussed during the third and fourth conferences was reflected in the cooperating teachers' statements.

In the reflective statements submitted for the third and fourth conferences during the first teaching block, three of the four cooperating teachers apologized to the researcher for not noticing that the tape recorder ran out of tape during their conferences. This was made in reference to the greater positive rapport which had developed between the cooperating teachers and their student teachers and how they really enjoyed talking with one another. The positive rapport statements also characterized the cooperating teachers' reflections in early conferences who referred to themselves and their student teachers as a team more so than the reflective statements made by those cooperating teachers who did not refer to themselves as a team. The cooperating teachers also made statements about how their respective student teachers seemed to notice their own growth, rather than as cooperating teachers having to point it out to the student teachers. " I believe he was very honest with his evaluation and I would expect a number of changes in his teaching approach for next term " (7/7;4;1). Two of the four cooperating teachers made statements about how formalization of the conferencing experience forced them to come to the discussion prepared, organized and focused. Participation in this format made the conferencing experience rewarding for the cooperating teachers.

Overall, I feel that the teaching experience was a positive one, and this interview process was good. It allowed us to reflect and to focus in a more concentrated way on important issues (8/6;4;1).

The cooperating teachers found themselves appreciating the learning that had occurred due to the nature of one aspect of their supervision activities: the prepared and focused nature in which they entered the conferencing experiences. The

cooperating teachers were able to measure the growth of their student teachers according to objectives which were developed by the cooperating teacher/student teacher pair before, during and after the conferences as a result of preparing to conference. The cooperating teachers were also able to assist the student teachers to learn how to measure their own growth.

The cooperating teacher reflective statements from the second student teaching block, particularly those submitted for the first two conferencing episodes, had little in common with each other across data sets. The statements were very specific to the situations surrounding the relationship and the teaching circumstances for each cooperating teacher/student teacher pair. However, the first and second reflective statements of two of the 'new' pairs of cooperating teachers and student teachers were similar to each other and to the early conferences from the first teaching block. In these statements, the emphasis was given to summarizing the topics discussed during the conference and the strategies the cooperating teachers were trying to impart to their student teachers.

For the two pairs who remained the same from the first student teaching block, cooperating teacher reflective statements for the first and second conferences mentioned that the rapport had shifted from just 'good', or 'comfortable' to 'collegial' in nature. "I enjoy talking with [student teacher 2] because of her enthusiasm and she takes suggestions so readily" (3/2;3;2). Positive rapport was also demonstrated in the conference data files for these pairs when the pairs shared a humorous moment

in relation to the content being discussed. Since there are exceptions to every 'rule', it was not surprising that one of the 'new' pairs of cooperating teachers/student teachers was also experiencing very positive rapport with one another, and the reflective statements from this particular cooperating teacher stated that the rapport between him and his student teacher had been very positive from the beginning of their relationship. By the third conference reflective statement for this 'new' pair, the cooperating teacher stated that the rapport was also becoming very collegial in nature.

The reflective statements for the third and fourth conferences were diverse in their topics and, like their first teaching block counterparts, were shorter than the reflective statements for the earlier conferences. The common themes for these conferences centered on acknowledging the student teachers for all their hard work and in appreciating the efforts and accomplishments of the student teachers, particularly in the statements from cooperating teachers who remained paired with their student teachers from the first teaching block. The cooperating teachers also acknowledged their student teachers for exploring the curricula with unique teaching methods and for developing into competent beginning teachers. There was an implied sense of pride in these statements both about the visible growth of their student teachers over the term or for two pairs, the year, and about themselves for having an important role in providing the student teachers with the supports, structures and opportunities to develop into competent beginning teachers. For example, one cooperating teacher expressed his pride by writing,

...I felt like I was dealing with a fellow teacher (an equal), and not as a "cooperating teacher" guiding a beginning teacher. (I hope that makes sense). [Student teacher 2] has expressed an awareness of the amount she has yet to learn as a teacher, but I am encouraged by her obvious competence already (9/2;3;2).

In a final conference reflective statement, this cooperating teacher wrote,

The process of carrying out the interviews , I believe, has been beneficial. It helped us to focus our thoughts, and perhaps provide a better vehicle for the student teacher and the cooperating teacher to discuss important issues in the student teaching experience (8/6;4;2).

After describing similar positive aspects of the experience, another cooperating teacher summed up his fourth conference reflective statement with "Negative aspects of this experience - None!" (7/7;4;1).

Major Themes Present in the Student Teacher Reflective Statements

Student teacher reflective statements typically included a summary of what was discussed in the conference and, in particular, tended to summarize the coaching comments from the cooperating teachers. A comment about whether the conference was 'good' or 'positive' overall was also included regardless of teaching block or conferencing episode.

In the reflective statements from the first and second conferences in the first teaching block, student teachers showed concern for their success in the classroom, mentioned the tape recorder (though only one of the four student teachers mentioned that the presence of the recorder was in any way intimidating), and each student teacher made reference to the format in which the conference was conducted. For example,

three of the four student teachers wrote that they appreciated that the conference began with a synopsis of the positive aspects of their performance in the classroom. These three student teachers also noted in the first conference reflective statements that the rapport between themselves and their cooperating teachers was good. These three student teachers continued to make positive comments about the rapport with their cooperating teachers in later conference reflective statements. One of the four student teachers did not have the same experience. Though she mentioned that each of the four conferences were 'useful' or 'beneficial' for positively affecting her teaching performance, she mentioned throughout her reflective statements that the conferences were focused on her mistakes.

However, I felt that my mistakes were the focus of the conference. I think it is necessary, as well, to discuss what goes well in the class. This is extremely [important] so I can make a conscious effort to continue the positive aspects. I felt this was absent, and felt a little disheartened after the conference. I am confident and know I did things well, but felt that I needed to hear it as well (3/2;1;1)

In the reflective statement from student teacher 2 about the fourth conference in the first teaching block between pair 3/2, student teacher 2 made reference to the fact that she 'finally' heard positive comments about her teaching abilities. It was not until the fourth conference reflective statement from cooperating teacher 3 that reference was made to the student teacher's positive abilities.

In the third and fourth conference reflective statements, student teachers made statements that implied a recognition of self-growth and of their own limitations throughout the teaching experience. They also made statements about skills still

requiring development and that they would make a conscious effort to improve those skills next term. For example:

I need to know what is wrong and fast so that I can fix it. I really appreciated the fact that if I had sat down and written what I thought would be on my [progress] report, it would have been very close to what was actually written. The one doubt expressed was my ability to work with Middle Years. I need to be a bit clearer in my organization in order to be successful with that grade level. This means, I suppose, that I need clearer introductions and to be less abrupt when changing gears in class. (2/3;4;1)

Along with statements about growth and skills yet to be achieved, student teachers were typically complimentary to their cooperating teachers in these fourth conference reflective statements, particularly those who would not be paired with their first term cooperating teachers during their second teaching block.

Reflective statements submitted for the second teaching block conferences typically illustrated progressive movement towards expert practice over the four conferencing episodes, especially for the student teachers who were paired with their first term cooperating teachers. This growth was evidenced by statements and examples which described and illustrated personal growth or achievement and statements of self-evaluation coupled with ideas for improvement. For example, student teacher 6 stated, "I felt comfortable both at the board and the overhead" (8/6;1;2) and in the same conference, as a note to himself, stated, "I should watch asking multiple redundant questions" (8/6;1;2). In the reflective statement from the third conference in the second teaching block, student teacher 6 stated several items which he was performing successfully and again noted items which required his attention. Each

successive reflective statement provided evidence that learned skills were being retained, issues were being resolved, and new learning was continuing to take place.

It is important to remember that, although there were four cooperating teacher/student teacher pairs participating in the research during this second student teaching block only three student teachers were involved in the primary and secondary data collection processes. Student teacher 2 was paired with cooperating teacher 3 during the first and second student teaching blocks, but was also paired with cooperating teacher 9 (who did not participate in the audio-taped conferences or the reflective statement data collection processes during the first teaching block) during the second teaching block. The reflective statement of student teacher 2 illustrates the same common qualities as did the other two student teachers'; however, her statements were also comparative of her cooperating teachers. She was very clear in her reflective statements about the qualities that her 'new' cooperating teacher exhibited regarding his active listening during conferences and his asking for her interpretation, understanding, ideas, and impressions more often and regularly throughout the four conferences. She also was quick to mention in her reflective statements from the first conferences in the second teaching block, that she had experienced 'excellent' rapport with the cooperating teachers when they had exhibited those qualities.

The reflective statements diverge in content at the second conference of the second teaching block, much like the conferences themselves. Convergence exists again in

the reflective statements for the fourth conferences. The three student teachers positively acknowledged the value of the conferencing process and acknowledged the dedication of the cooperating teachers to the development of student teachers.

One of the three student teachers did not begin her student teaching experience as successfully as she would have liked. Her first reflective statement spoke of feeling controlled during the conferencing experience. Her second conference reflective statement spoke of the conference in negative terms. She was frustrated about not pleasing her cooperating teacher and, in the same instance, was concerned that perhaps she was just unable to "take constructive criticism" (4/9;2;2). She acknowledged that she had a negative attitude during the conference and that she felt like a 'pupil' rather than a 'colleague'. Her cooperating teacher's reflective statement for the second conference also spoke of the conference as being 'terrible' overall. The third conference reflective statement was a self-diagnostic statement: the student teacher had used the reflective writing process as a means for sorting out her own issues and problems within the cooperating teacher/student teacher relationship and finished with a positive statement. "After the interview, [cooperating teacher 4] gave me many compliments about how I am doing and this will really help me through the times when our communication isn't the greatest and when I am feeling negative about our relationship" (4/9;3;2). It seems that clear communication was an important issue to this student teacher, as it was to all of the student teachers.

Major Themes Present in the Focus Group Data

The first pair of focus group sessions, held in early October 1996, focused on goals and action plans to achieve the goals. The cooperating teachers were in agreement with each other and very clear about their goals as cooperating teachers and clear about their perception of what the student teachers' goals should be while in the school, their departments, and individual classrooms. As each cooperating teacher stated one of his/her own goals, the other cooperating teachers would nod in agreement and then contribute a goal which no one had yet stated. Cooperating teacher goals included creating an overview of classroom procedures, how to deliver good lessons, providing a variety of experiences, classroom management strategies and transmitting the practical 'how to's' of teaching. They also knew exactly how they were going to achieve those goals and how they were going to help their student teachers achieve their goals. Cooperating teachers would model expectations, prompt/cue the student teachers when required, fade in the classroom to create independence and teach self-evaluation skills to create independent thinkers. Their perceived goals for the student teachers included whole school knowledge (culture, climate, structure of teams and departments and the interconnection and dependency of the staff), the role of the administration and support staff, how the school's diversity is a reflection of the community and the role the school plays in the community. In their individual departments, they perceived the student teachers' goals to be to get the benefit of several points of view on actually teaching and to get content-specific knowledge on how to teach. In the classroom, they would expect the student teachers' goals to be to learn to execute a

lesson with all of the classroom dynamics at play, learn how to fix mistakes, learn how to "feel the mood of the room and know how to proceed" (CT 2; FG 1)⁴, evaluate lessons and make improvements and gain a "sense of maturity" (CT 7; FG 1). This last perceived goal was made in conjunction with a comment about the unique child/adult role of a student teacher. The cooperating teacher concluded his statement with a comment about the need for the student teacher to use the time in the classroom to make the transition from decision-follower to decision-maker.

Student teachers were fairly clear about what their goals were while in the practicum setting. Generally, they agreed with one another while giving individual examples that dealt with trying new things, getting new ideas, learning new knowledge, getting direction from the cooperating teacher when making mistakes, and looking for teacher resources. The student teachers did not know how they were going to achieve those goals. One student teacher offered "trial and error" (ST 8; FG 1)⁵ as a method to achieving her goals and the rest of the group agreed. This was their only action plan.

The cooperating teachers had great difficulty deciding what the goals of the teacher education program were. Two of the participants offered general statements about helping student teachers function as independent teachers and providing student teachers with the necessary skills to get a job, but beyond this, no one knew.

⁴CT 2;FG1: file source reference code meaning that the statement was spoken by cooperating teacher 2 during focus group session 1. The cooperating teacher numbers match the numbers used in Table 3.

⁵ ST 8;FG 1: the statement was spoken by student teacher 8 during focus group session 1. The student teacher numbers match Table 4.

The student teachers were very clear about the Faculty of Education's goals for them. They spoke of the Faculty's goals in terms of the student teaching portion of their program and all agreed with one another when they offered the following: to help us realize our goals. to broaden our points of view, to give us knowledge and ideas to start with, and to discover what works for us.

During the discussion about the program goals, one of the cooperating teachers made a comment regarding his perception of a theory/practice disjuncture within the Faculty of Education. All of the cooperating teachers agreed with him. When the researcher asked for him to elaborate on his point, he said, "Theory taught in the university or college setting and staged teaching situations fall short of reality in the classroom. They [student teachers] get here [practicum setting], and they can't do what they did there." (CT 6; FG 1) When the group agreed with his comment, the researcher asked if the cooperating teachers saw anything within the university program structure which contributed to this disjuncture. The participants suggested that it was due to unrealistic Curriculum and Instruction course assignments. The cooperating teachers said that their student teachers had prepared lesson plans and unit plans in the curriculum and instruction courses which worked well for them in the university setting, but, when the student teachers used the same unit or lesson plans in a grade level appropriate classroom, the lessons and their teaching ability failed. One of the cooperating teachers suggested that to help correct this disjuncture, student teachers should spend more time in the schools in smaller, more frequent blocks of time. He suggested that more experience in the practicum setting

would allow the student teachers to test the theories they had learned more regularly.

The student teachers had some difficulty with the question about their perception of the cooperating teacher's goals in the school and in their departments. They did offer a few ideas about what the teacher's goals would be in the school but were not sure of the departmental connection within a school. They were quite clear about a teacher's goals within a classroom. For example, students should leave the course more knowledgeable than when they entered, the teacher should develop a good relationship with the students, develop life-long learners and make a difference in the students' lives.

The second pair of focus group sessions were held at the end of the first teaching block. The questions were designed to elicit the student teachers' and cooperating teachers' opinions of how the experience went, both for themselves and their perceptions of the how the experience went for the other group. The student teachers were asked to express how they felt about one positive episode and one negative episode which occurred during their teaching block. They were then asked to state what they felt they had learned from each episode. The positive experiences were related to establishing a positive rapport with their students, either with the class as a whole or with individuals in the classroom. The student teachers had difficulty expressing what they might have learned specifically from the positive experience, but the comments were about feeling an increase in their own self-

confidence. Negative experiences were related to classroom management issues and making errors in content while teaching. Articulating what was learned from these instances was much easier for the student teachers. Lessons learned revolved around being 'over-prepared' with content activities for the students and making more accurate notes to teach from so as not to get caught in a content error.

The cooperating teachers spoke of their positive experiences in terms of the successes of their student teachers - those moments when the "light bulb went on over their heads" (CT 7; FG 2). Some examples included in this discussion were "approaching the classes with the self-confidence to believe they [student teachers] were capable of doing the job" (CT 9; FG 2) , designing a lesson that was appropriately paced, had good content, used a variety of teaching methods, maintained high interest levels from the students, and used good questioning techniques and designing a "top notch" (CT 6; FG 2) module after only being given an idea to work with for the initial design. None of the cooperating teachers could articulate what they might have learned from these experiences. When speaking of the negative episodes which occurred, most spoke of 'total disaster' classes where the student teacher was either ill-prepared or, through poor management strategies, lost the class somewhere during the lesson and no structured learning occurred. All cooperating teachers said that it was very hard for them not to step in and rescue their student teachers. They learned that they needed to discuss things more thoroughly with the student teachers both before and after lessons.

When the student teachers were questioned about strategies that their cooperating teachers had provided for them before, during or after the positive and negative experiences they had just shared, the student teachers said they got a lot of support with methodology items such as using diagrams in specific places when teaching a lesson that had a lot of theory in it, using media devices to help explain the content and starting slowly when teaching new content items. Three of the six student teachers also said that the 'mini' conferences with their cooperating teachers after each lesson and then the formal, longer conference each week helped them to see how to do things more effectively with each class.

The most important and beneficial strategy that the cooperating teachers provided for the student teachers was the conferencing, whether it was for five minutes right after a class or the 'formalized' conferences some of the participants were having each week. Other strategies included having prepared their classes for the arrival of their student teacher and observing the student teacher frequently to provide accurate feedback, modeling and assisting the student teacher in maintaining class control if necessary.

Given the varied experiences of the student teachers, the group was asked if there were supports that their programming at the university could have provided to better prepare them to teach. This was the first time that the researcher had difficulty getting the group to stop talking. All of the student teachers stated that the curriculum and instruction coursework needed to change to reflect the curricula

being used in the schools. They all commented that they were going home every night and teaching themselves the necessary content to get through the next day's classes. All of the student teachers stated that they did not receive enough practical strategies for managing classes - not just for behaviour issues but for pacing a lesson appropriately, content information and introduction/conclusion structures for lessons, to name a few. One of the student teachers mentioned at the end of the discussion that she found comfort in the fact that she was "not the only one floundering" (ST 5; FG 2). On the other hand, the one thing that the student teachers did learn from their observation experiences is that no teaching plan is fixed. Lesson and unit plans need to be flexible in content and structure to accommodate all of the unexpected interruptions, whether the interruption was a last minute student initiated activity, or the cooperating teacher finding it necessary to elongate or shorten a topic between the student teachers' visits.

Cooperating teacher comments echoed the responses of the student teachers to the university programming supports question. The comments were almost identical. The cooperating teachers mentioned a few examples that the student teachers did not: the need to teach long term planning, and the need for the faculty to set up a screening process of some kind or provide earlier long term contact in the schools so that the student teachers would not have to wait until their fourth year of university to find out that they either could not teach or did not want to teach.

When asked what additional supports could be put in place in the school to support their experience, the student teachers suggested that immediate feedback from the cooperating teachers was crucial to their learning (this was happening most of the time; they just wanted to emphasize how important it was for them). Any feedback from the cooperating teachers should begin with positive comments first and include clear communication of expectations from both cooperating teachers to student teachers and from student teachers to cooperating teachers. They also suggested that having only one cooperating teacher in the first teaching block instead of two would have been better for the two student teachers who were feeling overwhelmed by the preparation required to teach in two content areas so soon in their practicum experience.

Both the cooperating teachers and the student teachers felt that the Friday 'observation' days during the eight weeks prior to the commencement of each five week block became increasingly frustrating to both the cooperating teachers and student teachers. Cooperating teachers found it difficult to plan meaningful experiences for the student teachers which could logistically unfold, and the student teachers found themselves becoming increasingly bored with the observation task because of the changes to the plans which would occur from one week to the next. Participants also reported that Fridays are also very poor days to send the student teachers to a school for observation. Fridays are days when the week is being summarized, not when new information or techniques are being taught. Fridays are days when school-based activities, like extended lunch-hour dances, or pizza sales

to fund student council activities occur, or school spirit activities which interrupt the 'normal' flow of a day. Cooperating teachers and student teachers would prefer to be involved in observation activities on Mondays or Tuesdays when the week is just beginning, and typically more of the formal teaching takes place in classrooms.

The cooperating teachers were in agreement with each other and with the student teachers when they suggested that clear communication between the cooperating teachers and their student teachers was essential to the student teachers' success.

They felt that consistent expectations among the school staff who are in the position of being a cooperating teacher would be beneficial to both the cooperating teachers and the student teachers. They felt, though, that guidelines about or a role definition of a cooperating teacher would be necessary and that the direction for development of such guidelines or definition should come from the Faculty of Education. They also all suggested that, as a group, they needed to clearly define their expectations of the student teachers and then share those expectations with the student teachers.

The third pair of focus group sessions were held at the end of the second teaching block. The questions were designed to elicit reflections on the year's experience. The student teachers were asked to reflect on their experience and highlight five things which they felt were the most influential on their growth throughout the experience. They were asked to discuss these five items in terms of advice they would give to new student teachers. All of the student teachers spoke of learning classroom management techniques, having written goals, the portfolio process, clear

communication of their expectations to their students, having realistic consequences planned if students did not meet their expectations, being prepared psychologically for the challenges and stresses of the teaching profession, finding and maintaining a positive attitude, seeking out a staff member with whom they could talk when personally taxed, working as a team in their department (sharing ideas and resources), and getting to know the school's culture and how that culture fits with their personal philosophies of teaching and education.

When asked to compare the advice statements with their goals from September, the student teachers felt that their goals were similar to their statements but fell short in terms of the degree to which they found themselves actively engaging in experiences to reach their revised goals as their practicum experiences progressed. Their perceived impressions of the teaching profession did not match their actual experiences.

When asked to reflect on what surprised the student teachers the most from their experiences, they generally agreed with each other, but each identified his/her own specific issue. For one student teacher, it was the large number of classroom management issues. She felt she was completely unprepared for the many instances where she had to deal with students under these circumstances. Another student teacher's goal was to collect paper resources while in the school, and she was surprised by her dependency on her 'colleagues' for information. She did not realize how important the people in the school building were going to be to her. A third

student teacher cited his surprise at the work load of preparation for classes and the task of teaching. He had expected to spend more of his 'prep' time marking student assignments, not preparing to teach. A fourth student teacher was surprised by how little she knew and how ill-prepared she was for teaching in general. And the fifth student teacher was surprised by the influence of school policies and procedures on teaching in the school and how losing class time under any circumstances (storms, school performing arts productions, and floods) could create enormous time pressures. Since this student teacher raised the point about coping with lost time, the researcher asked the student teachers to comment on how they managed under the circumstances. The responses were similar in that they made themselves available outside of regular classtime for the students who needed to catch up and photocopied class notes for other students who could not attend 'make-up' classes.

The cooperating teachers were asked similar reflective questions in their third focus group session. When asked what advice they would give to a first-time cooperating teacher, they all agreed with each other's comments and offered their own specific examples. Some of the suggestions were: to communicate expectations clearly to the student teacher, discuss the student teachers' goals and expectations so the cooperating teacher can support their development, teach lesson and unit planning strategies as soon as possible, work with the student teacher to develop assessment strategies, be fair but candid during regular evaluation of the student teacher's performance, explain the school culture and philosophy and its role in conducting daily business within the school, observe student teacher performance with a plan

and discuss the plan with the student teacher before and after the observed performance and discuss strategies with the student teacher for achieving both the student teacher's and the cooperating teacher's goals. When asked to compare the advice for the 'new' cooperating teacher to their goals from September, the cooperating teachers felt that they were the same.

To elicit more specific information about the value of the conferencing experience to the cooperating teachers, the researcher asked them to reflect on their feelings about their experiences. Most agreed that they were initially uncomfortable with the tape recorder, but that they slowly grew to ignore it. For the cooperating teachers who were still participating in the audio-taped conferences during the second teaching block, the recorder became just another 'prop' during the discussion. One cooperating teacher said that the recorder forced him to focus more, and it forced him to follow-up on statements or suggestions he had made to his student teacher. "It was a pain in the butt, but it was a good pain!" (CT 7; FG 3)). As a follow-up question to this statement, the researcher asked the cooperating teachers to reflect on what they learned from this experience.

The cooperating teachers said that the 'formal' process of arranging a time to sit down and discuss their student teacher's performance in the classroom and being recorded helped the cooperating teachers to focus on the salient features of conferencing. One of the cooperating teachers was relatively inexperienced in the cooperating teacher role and found that participating in the research study overall

was a valuable experience. He said that he did not really discuss issues with his student teachers in the past like he did this year, and he felt that the conferencing experience made a difference in his abilities to provide his student teacher with the supports that she needed to refine her teaching skills. He also said that writing the reflective statements after each conference helped him to understand more about his role in the cooperating teacher/student teacher relationship and to consider what he needed to do to help his student teacher achieve her goals. All of the cooperating teachers found the focus group meetings very helpful for sharing ideas, voicing opinions and learning from their colleagues who were experiencing similar situations. The cooperating teachers said that they would like to continue meeting as a group in the next school year to discuss similar issues, as long as someone would facilitate the sessions. They also requested that the researcher produce a summary of their recommendations and discussions so that they could share the information that was generated in the sessions with their colleagues and have a resource for themselves.

The following chapter will incorporate the results from the audio-taped conferences, reflective statements and focus group data to discuss patterns, themes and both the expected and unexpected results. Implications for the behaviour of supervising student teachers and recommendations for the supervision of student teachers based on the data will also be discussed.

CHAPTER 5: DISCUSSION

The preceding chapter presented the patterns and themes identified in the audio-taped data files, and in the analysis of both the secondary data sources. In chapter 5, the focus shifts from reporting detailed results to the discussion of more global patterns and themes observed across data sets. The chapter is organized in sections which elaborate the emergent patterns and themes observed across and between the first and second student teaching blocks, discuss the implications of the patterns and themes observed for understanding the nature of the supervision of student teachers, address the research questions which guided this study, and make recommendations for the supervision of student teachers based on the research findings.

PATTERNS ACROSS CONFERENCES IN THE FIRST TEACHING BLOCK

This section reviews the patterns and themes which emerged from the first student teaching block. First, early conference files, the reflective statements from the early conference files and the data generated from the first set of focus group sessions are reviewed in comparison to one another. Second, conference files which occurred later in the first teaching block, their respective reflective statements and the second set of focus group sessions are reviewed. These late first block conference files are subsequently referred to as transition conferences. The term 'transition' is used to refer to these conferences because they form a bridge to the second teaching block conferences, particularly for those cooperating teacher-student teacher pairs who remained together throughout the practicum.

Early Conferences

Generally speaking, the first conferences between the cooperating teacher and student teacher pairs were very teacher-centered compared to later conferences between the pairs. Conversations were directed towards and focused on content, particularly the areas of domain knowledge, heuristic strategies and control strategies. Modeling was especially evident as cooperating teachers tried to illustrate and exemplify their teaching behaviours and the relationship between what they said, how they said it, the subject matter being taught, the grade level of the material and the anticipated outcomes of the teaching behaviours. Many questioning techniques were employed by the cooperating teachers in these early conferences to elicit reflective statements from the student teachers in regards to their own behaviours as compared to their observations of expert behaviours, but to no avail. Criticisms of the student teachers' behaviour and teaching skills were typically subtle during this early formation of the cooperating teacher/student teacher relationship and included humourous references or anecdotes to help soften the critical references. Much encouragement and support was provided to the student teachers in the form of coaching and scaffolding in the early conferences to support the development of an image of themselves as capable and competent beginning teachers.

Reflective statements provided by the cooperating teachers and student teachers for these first two conferences described similar issues, although they were presented from different perspectives. Cooperating teachers and student teachers were

concerned about the student teachers' growth and development, and, where cooperating teachers made reference to their relationship with the student teacher and the act of supervision in terms of a team effort between individual pairs, the student teachers responded very positively. Student teachers were also clear about the importance of beginning the conferences with positive comments in regards to their teaching, followed by items requiring improvement.

The early conference patterns of teacher-centered and content-directed supervision fit well with Collins, et al. (1989) cognitive apprenticeship framework description. The first three methods used in the cognitive apprenticeship framework- modeling, coaching, and scaffolding- provided solid techniques for guiding the cooperating teachers through the highly complex task of imparting the content knowledge required to teach. In this study, these three methods seemed to occur quite naturally since they were methods used by the cooperating teachers to teach their own students on a regular basis. Where these processes were used in a planned and focused fashion during conferencing with the student teachers, student teacher growth was clearly demonstrated. Where the supervision tasks were not planned and little time was spent by either the cooperating teachers and student teachers in preparation to conference with one another, evidence of little or no learning was evidenced in the conference data files or reflected in the reflective statements submitted by the participants. Planning to conference was an important factor for cooperating teachers and student teachers throughout the research study.

The strong emphasis on planning also underlined the importance of focusing on key issues, especially during the early conferences. Cooperating teachers stated in both the reflective statements and the focus group sessions that the 'formalization' or scheduling of the conferencing process forced them to plan. This planning focused their discussion on key issues surrounding the student teachers' performance over the course of the week. By focusing on the issues, the conferencing was not only more efficient, but much more productive in terms of helping the student teacher to learn, grow and develop self-monitoring skills early on in their practicum. According to Kagan and Warren's (1991) research on the nature of supervision in early clinical experiences, the focus of the supervision should change as the learning needs of the student teacher change. This change in focus was demonstrated by the cooperating teachers in early as well as in later conference data files, especially when the cooperating teachers had planned the topic, format, and content for the conference to be able to monitor and respond to the student teachers' needs. The changing needs of the student teachers were also reflected in the conference data files by the cooperating teachers' willingness to coach, scaffold or fade in the supervisory process.

The focus on the learning needs of individual student teachers demands effective communication between cooperating teachers and student teachers. According to Brown, et al. (1989), communication is essential for learning and growth to occur in an apprenticeship model. Many statements were made by the pairs during all modes of data collection with regard to the importance of clear communication.

Brown, et al., (1989) state that learning within any context or culture is dependent upon the exchange and modification of ideas and the development and appropriation of belief systems. To facilitate the development of belief systems, conversation and narratives must be promoted, not inhibited. This principle is reflected in the data from early conference data files which centre around narratives by the cooperating teachers (experts) as the cooperating teachers tried to provide the student teachers (novices) with provisional conceptual maps to the complex and enculturated nature of teaching. Sternberg and Horvath's (1995) prototype view of what constitutes expert teaching is arranged around three clusters of expert-novice differences - domain knowledge, efficiency and insight. The first cluster, domain knowledge, is clearly illustrated in the early conference data files as the 'experts' model, coach and scaffold the student teachers through the early phases of learning content, pedagogical and practical knowledge within the domain of teaching. These early narratives provide content information while situating the information in its sociological context within the school's community, within the school itself, within the departmental subject areas, and finally within the classroom, lending credence to the cognitive apprenticeship (Collins, et al., 1989) framework category of teaching global before local skills.

A specific aspect of communication which emerged from the early conferences, reflective statements and focus group sessions was the importance of establishing goals and reformulating those goals as growth and development occurred. During the first student teacher focus group session, it was clearly evidenced that the student

teachers' collective lack of direction and lack of knowledge about the complex nature of teaching would be the source of much frustration during their student teaching experience. The cooperating teachers clearly articulated their own goals for the supervision task as well as their perceived goals for their student teachers. They were also very clear about how they would achieve their goals and the ways in which (for the most part) they would help the student teachers achieve theirs. The frustration between the pairs seemed to surface here when the cooperating teachers' perceived goals for the student teachers did not match the student teachers' actual goals. Adding to the frustration was the lack of student teacher-developed action plans for achieving the few goals that they had developed. Based on these observations, it seems imperative that a discussion about clearly defined goals and action plans for achieving those goals be included in early conferencing between cooperating teachers and student teachers to support student teacher growth and development toward competent practice.

Another characteristic of communication unique to these early conferences was that each student teacher experienced a self-realization moment where the reality of his/her observed performance in the classroom did not match his/her own perception of his/her performance in the classroom. Each instant of self-realization was precipitated by the cooperating teacher speaking at considerable length about those aspects of the student teacher's performance which were in need of immediate correction. Cooperating teacher dialogue passages were much more nurturing until

this point in the conference, and this shift in the style of the cooperating teacher narrative appeared to precipitate a qualitative change in communication. Until this self-realization point was reached, the student teachers seemed to regard the criticisms of their classroom performance as very personal, and, as a result, were defensive and unwilling or unable to step outside of themselves to evaluate the technical aspects of their teaching skills. From this moment forward, student teacher self-evaluation skills, articulation narratives and comparative expert-novice reflection statements began to take place. The ability of the student teachers to now view their classroom performance more objectively and the benefits of being able to do so were reflected in both the cooperating teacher and student teacher reflective statements. Progression towards achieving expert practice had truly begun. This self-realization instant also had a positive effect on the communication between the pairs. From this moment forward, student teachers had a greater ability to respond to behavioural and performance corrections requested by the cooperating teachers, and cooperating teachers, sensing that they had 'finally gotten through to them' and having seen some improvements in the student teachers' performance abilities, were encouraged to continue supporting, suggesting, and coaching the student teachers through the development process.

Although clear, ongoing communication between the cooperating teacher/student teacher pairs was demonstrated to be an essential component at all times during the relationship, it was especially critical during the early phases of supervision. It was stressed many times by both cooperating teachers and student teachers that it was

important to have a clear understanding of the other's expectations, reasoning, and applications of their behaviour from the outset. The patterns observed suggest that effective communication during conferences begins with the positive aspects of performance to encourage retention of those skills for further development and refinement. Those aspects of the student teachers' performance which require improvement should be clearly defined and illustrated using an assessment strategy which is honest and fair. The strategies which were preferred, and had the greatest impact were to provide regular and frequent feedback, to illustrate the specific behaviours in need of correction with examples of classroom performance, and to describe and compare the preferred method of performance with examples of anticipated outcomes as a result of the corrected performance skills. Modeling was used both in the conferences and in the classroom by the cooperating teacher to demonstrate the effects of poor performance versus the more effective performance. By eliciting ideas/solutions for improvement or correction from the student teacher and by providing ideas of his/her own, the cooperating teacher supported the development of self-evaluation skills. During subsequent conferences, the cooperating teachers would refer to these demonstrated examples and then plan to sequence future student teacher classroom experiences to provide them with opportunities to practice the desired skills.

The six teaching methods in the Collins, et al. (1989) cognitive apprenticeship framework got a real 'workout' from the first three conferences in the first teaching block. Cooperating teachers used multiple teaching methods to steer student

teachers through the complex processes of learning the specifics of content while managing the events in the classroom. The teaching methods were used during conferences to draw attention to events to point out what should have been learned by the experience and to recreate certain events to reinforce the expected outcomes or to create new experiences to promote further growth and development. In all instances, it was critical that the learning experiences of student teachers remained situated in their sociological context.

Transition Conferences

A pattern observed later in the first teaching block was that there were changes in the behaviours of both cooperating teachers and student teachers. Towards the end of the second conferences and into the third conferences, the conferencing style used by the cooperating teachers shifted from being more teacher-directed to becoming more student-centered. The narratives from the student teachers became longer, articulation passages bordering on reflection began and the cooperating teachers' role shifted to that of 'facilitator'. Modeling, coaching and scaffolding still occurred, but more in relation to moving student teacher thought process towards becoming the decision-maker in the classroom, rather than the decision-follower. During these transition conferences, student teachers began to 'explore' a variety of teaching techniques and to develop their own heuristic and control strategies while progressing through the content. Student teachers asked for assistance with new ideas, whereas in earlier conferences they were content to simply follow directions. Student teachers began to compare their thought processes and basis for action to the

behaviours they had observed from their cooperating teachers. Cooperating teachers responded in kind by providing the necessary supports to assist the exploration, fading as skills became more developed and the student teachers were able to perform tasks on their own. During these transition conferences, student teachers demonstrated that they were beginning to perform teaching tasks relative to some intrinsically motivated goal and that this performance was the direct result of having had the cooperating teachers sequence events and teaching opportunities first, globally, and then with increasing complexity and diversity. The research of Kagan and Warren (1991), Collins. et al. (1989), Goldhammer, et al. (1980), Guyton (1989) and Garland and Shippy (1995) support the cooperating teachers' supervision strategies which promoted the development of these positive results. Conferencing in a planned and focused fashion provided the cooperating teachers with the opportunity to continue modeling their thinking processes and, at the same time, to encourage student teachers to articulate and reflect upon their thinking processes and decision-making skills while discussing the nature of planning, observing, reflecting and so on. The cooperating teachers gradually provided opportunities for independent practice as classroom opportunities allowed for increasing task complexity and diversity.

There were also transition points for cooperating teachers. By the third conference in the first teaching block, three of the four cooperating teachers were beginning to see the benefits of planning to conference with the student teachers and made statements to that effect in their reflective statements. Focus group sessions at the

end of the first student teaching block provided clear direction for the cooperating teachers and student teachers about their direction through the second student teaching block. Cooperating teachers who would be paired with the same student teachers through the second term had a clear sense of the goals which needed to be achieved with their student teachers, and those who were relinquishing their student teachers made statements about their satisfaction with the progress their student teachers had made throughout the first teaching block.

In contrast to the general satisfaction with student teacher growth during the first student teaching block, cooperating teachers still expressed concerns about how ill-prepared the student teachers were for this practicum experience. During the student teacher focus group session, similar statements about their lack of preparedness were made by the student teachers. However, the student teachers were more emphatic about their lack of preparedness for the teaching experience and expressed resentment toward the Faculty of Education in regard to the frustration they had experienced. The student teachers were reminded that, during the first focus group session held early in the practicum, they were very clear about what the Faculty's goals were for them during their practicum. During this second focus group session, the student teachers questioned why the Faculty had not prepared them to achieve those goals. Suggestions for improvement to the pre-practicum coursework included changing the nature of the curriculum and instruction coursework to better reflect the needs of a beginning classroom teacher and to base those changes in the provincial curricula used to teach the content in the various

subject areas. The cooperating teachers were quite clear during their focus group session about improvements that could be made to the pre-practicum programming to better prepare student teachers. They too, felt that priority should be given to providing content instruction which takes its direction from the provincial curriculum guides. Many complaints were registered from both cooperating teachers and student teachers about how unrealistic curriculum and instruction coursework was for preparing the student teachers for the classroom experience. During the second focus group session for cooperating teachers, one teacher spoke of the student teachers' perception of a theory-practice disjuncture. Cooperating teachers and student teachers, alike, believe that the perceived lack of relevant programming and preparation at the university level continues to fuel this disjuncture relative to teaching techniques, classroom management strategies, preparation strategies and connected knowledge about and between the sociological environments where learning to teach begins (the university) and learning to teach is realized (the practicum setting).

In this respect, the cognitive apprenticeship framework provides not only a critical lens for evaluating and structuring supervision strategies and programming for student teachers in the practicum setting but also a critical lens for designing and delivering post-secondary preparatory coursework and experience throughout the four or five year degree program for the student teachers. Cooperative and collaborative teaming structures between the preparatory institutions (the schools and the universities) would provide powerful motivators and mechanisms for

extending the learning processes of all of the participants in the supervisory process, namely, the cooperating teachers, the faculty advisors, and the student teachers. Clearly defined roles, responsibilities and expectations of and by the partnered institutions with a strong methodology in place for achieving the goals of all of the participants would provide communication foundations upon which solid connections between theory and practice could be built. The cognitive apprenticeship framework, applied in a directed manner, could help provide this communication structure.

Conferences, reflective statements and the focus group sessions illustrated that goal setting and effective communication strategies were critical to the student teacher learning process. Structure for the goal setting and communication strategies was provided by planned and regularly scheduled conferencing between the cooperating teachers and student teachers. Goals and expectations should be established as soon as possible in the practicum experience so that communication strategies can be effectively employed through the conferencing structure. Goals should be revisited and modified regularly to provide a means for evaluating student teacher growth and cooperating teacher practicum management techniques. Though early conferences were more teacher-directed, it appeared that this teacher-directed format was necessary for the student teacher to become familiar with content issues regarding domain knowledge, heuristic strategies and control strategies. Teaching methods used by the cooperating teachers in these early conferences were dominated by the methods of modeling, coaching and scaffolding as teachers tried to

demonstrate the connections between the content knowledge and its application to classroom teaching situations. Critical to the aspect of communication was the need for the student teachers to reach a point of self-realization. This self-realization juncture was necessary for the student teachers to truly begin the progression towards expert practice.

Along with developing the necessary content skills towards achieving expert practice, transition conferences set the preliminary stages for the development of a conceptual map. A conceptual map of the situated and complex nature of teaching is the foundation upon which the student teachers would develop their specific teaching skills. Cooperating teachers and student teachers felt that preliminary skill development could be supported more effectively if pre-practicum or co-practicum coursework was more closely linked to the curricula taught in the schools. The cooperating teachers and student teachers suggested that the forum for examining provincial curricula as it is taught in the schools and for including some of the general teaching strategies such as lesson and unit planning as it applies to specific curricula, could be achieved through the curriculum and instruction courses.

The transition conferences also illustrated a shift in the nature of the communication strategies used during the conferences. Cooperating teachers became facilitators in the conferencing process while, on a regular basis, encouraging student teachers to articulate, reflect on, and explore the variety of teaching situations in which they were immersed. Reference to the contextual nature of teaching was articulated,

reflected on, and explored by the student teachers as a result of their experiences to this point in the practicum experience.

PATTERNS ACROSS CONFERENCES IN THE SECOND TEACHING BLOCK

The conferencing process illustrated some unique characteristics during the second student teaching block. The most apparent of those characteristics was the demonstrated growth of the student teachers who remained with their first term cooperating teachers. Early conferences between these pairs exhibited similar qualities to the late conferences in the first student teaching block. Initial conversations began with a review of achievements and particular aspects of the student teacher's performance on which the pair would focus this term, with the goal of providing refinement of partially learned skills while continuing to increase task complexity and diversity. Reflective statements from both cooperating teachers and student teachers spoke of these tasks. Student teacher reflective statements became less statements of summary and surface emotions relative to achievements or failures and more realistic comparisons of performance in the classroom to goals and ideals they wished to achieve. The statements contained plans for acting on these evaluated skills and were more directed towards achieving expert practice. In contrast to reflective statements made during the first block, student teachers' references to their relationships with their cooperating teachers were more scarce, though positive and 'collegial'. Similarly scarce were long statements about how they 'felt' during the conferencing process. Statements of the beneficial nature of the

conferences from both the cooperating teachers and student teachers were present, although not always direct. More statements described or illustrated growth through examples and comparisons of performance and the skills which still needed to be achieved. The student teachers were also using the reflective statements to write themselves 'memos' on items which were discussed during the conferences so as not to forget the salient points.

In contrast, those cooperating teachers and student teachers who changed partners during the second student teaching block had to spend initial contact time forming a relationship. Forming a relationship was not a bad thing - it was essential that all of the relationship development patterns described during the initial conferences of the first student teaching block took shape in a similar manner. The unfortunate part was that the cooperating teachers and student teachers who did not remain with their first term partners had to focus a large part of their energy on establishing goals, roles, and expectations, instead of continuing to focus their energy on refining their teaching skills. In many cases, completely new content and contexts had to be learned by the student teachers as well, compounding the difficulties of working towards achieving competent teaching skills.

In the global category of sociology, the cognitive apprenticeship framework of Collins, et al. (1989) speaks of the crucial role the sociology of the learning environment plays in formulating decisions about curriculum and pedagogical practice and in determining the ways in which these decisions affect learning. In a

practicum setting. student teachers learn teaching skills in the context of their application to realistic problems (in their major and minor content areas in the practicum classroom) and within a culture focused on and defined by expert practice (one department with one or two cooperating teachers for the duration of their practicum experience). These student teachers continually see the skills they are learning being used in ways that clearly convey how they are integrated into patterns of expertise (depth of experience with cooperating teachers over the year) and their efficacy and value within the subculture (breadth of experience across grade levels within the same department/subject area with cooperating teachers over the year). Collins, et al.. (1989) remind us that certain aspects of the social organization of apprenticeship encourages productive beliefs about the nature of learning and of expertise that are significant to the learners' motivation, confidence, and their orientation toward problems that they encounter as they learn. Substituting 'school' for 'social organization' and 'student teaching practicum' for 'apprenticeship' in Collins' description provides the necessary motivation for structuring the practicum experience across student teacher blocks to keep pairs of cooperating teachers and student teachers together throughout the duration of the practicum. This longer term association encourages the development of cooperative and collaborative learning styles and collaborative skills generally. For the pairs studied in this investigation, interrupting the development of those skills by changing content areas and cooperating teachers stunted the learning process for both the cooperating teachers and student teachers. New pairs of cooperating teachers and student teachers were forced to begin all over again, and forming relationships based on trust

takes time. Learning to communicate effectively also takes time. Without a model to guide and support the supervisory process, the student teachers who switched partners may not have progressed past the development point from first term because the new pair had to establish a relationship before determining where the student teachers' skills needed further development. Though student teachers were formally evaluated at the end of the first teaching block by the faculty advisor and cooperating teacher, a copy of the report was not passed on to the second block cooperating teacher. Where the cooperating teacher and student teacher pair remained the same for the second teaching block, both participants were aware of what was achieved and what still needed to be achieved and, therefore, had a sense of direction for the second teaching block. Even though some of the pairs remained together for the second teaching block, little evidence existed among the pairs that the evaluation strategies employed by the faculty advisor and cooperating teacher were consistent. If something as simple as a written progress report, based on the cognitive apprenticeship framework, had been passed on with the student teacher, especially where a new pairing was being formed, cooperating teacher-student teacher pairs could have continued to work on the skills to be attained while developing a relationship and learning new content.

The contrasting patterns illustrated in the second block conferences and reflective statements demonstrated the need for consistency among and between the cooperating teachers and student teachers. The themes were clear about the importance of structuring the practicum experiences so that the student teachers are

not overwhelmed by having to 'start all over again' with building new, trustful relationships during the second teaching block and having to put learning performance skills on hold while cooperating teachers and student teachers try to sort out which skills need refining and which skills were non-existent from the first teaching block. The data illustrated that measures need to be developed to provide greater consistency throughout the practicum experience, particularly to help connect the sociological contexts in which the teaching takes place.

PATTERNS ACROSS STUDENT TEACHING BLOCKS

Discussions during conferences in the first student teaching block early conferences were rather stiff-almost as if they were scripted. They were typically focused on aspects of the student teachers' performance and offered little insight into the people behind the assigned roles of cooperating teacher or student teacher. Towards the end of the first teaching block and throughout the second teaching block (and particularly for those pairs who remained the same), the people and personalities began to surface, and the passions which directed the teaching and learning brought out personal characteristics of both teachers and students. Moreover, longer term pairings between the cooperating teachers and student teachers supported the growth and development of the student teacher in a more positive manner and contributed to the growth and development of the cooperating teacher, both as supervisor and classroom teacher. Insights to the benefits of longer term connections between cooperating teachers and student teachers are evidenced in Clarke's (1995) study as he emphasizes a similar important theme: learning occurs best when a safe

and non-threatening environment has been established for the student teacher. This type of environment takes time to establish.

The consequences of sustained cooperating teacher-student teacher relationships are illustrated in observation with respect to exploration. Exploration was defined by Collins, et al. (1989) as the natural fading of supports by the cooperating teacher and, like Kagan and Warren (1990), were clear about the importance of student teacher exploration within a domain area if he/she was to achieve expert practice. Surprisingly little cooperating teacher-directed exploration was evidenced in the conference data files at the end of the first student teacher block. One might expect to see more of it in a senior years practicum, both in terms of cooperating teacher-directed and student teacher-initiated exploratory instances. A few instances of student teacher-initiated exploration did occur towards the end of the first teaching block with regard to finding 'time filler' activities for the students in their classrooms. Cooperating teacher-directed and student teacher-initiated exploration did appear more frequently during the second student teaching block, particularly between the pairs who remained together over both blocks. Exploration of new content material and untried teaching techniques is important for the development of the student teacher. Requiring student teachers to enter the exploration stage is critical if they are to learn to frame teaching opportunities and situations that they can implement successfully. Exploration is the natural culmination of the fading of supports from the cooperating teacher. Unless exploration strategies are taught, student teachers will not know how to function productively at the exploration level or with any

sense of autonomy. The ability to function autonomously is critical to teaching since teaching is largely performed in isolation from one's peers. Though collaboration occurs through teaming structures during certain planning phases, the teacher must be able to make decisions about how best to proceed on his/her own once inside the classroom.

The value of communication within a community of practice transcends the cooperating teacher-student teacher relationship. One student teacher aptly stated in the final focus group session that, "I was surprised by how much I relied on my colleagues for resource and input to make my teaching effective. All of the conversations we had became increasingly important to the quality of my teaching." (ST 3; FG 3) Because of the key belief that expert knowledge is not concentrated in any single person, skilled collaborators, 'teams' or 'departments' are more likely to be open to and seek help and input from others. Cooperating teachers who encouraged using other departments and the people within and outside of their own departments as resources supported student teacher learning in multiple contexts while encouraging discussions about the culture of expert practice and fostering intrinsically motivated goals. Cooperative learning could foster the situated articulation of processes and concepts, thus providing support for the cooperating teachers and student teachers to gain conscious access to and control of cognitive and metacognitive processes and the ways those processes employ conceptual and factual knowledge.

In the second teaching block, one of the 'new' cooperating teacher/student teacher pairs had a very different experience than the others. Some of the differences could be attributed to the subject area since this was not an academic or core area subject, but one might also expect the cognitive apprenticeship framework to be evidenced quite naturally in this medium. Instead of cognitive apprenticeship, however, this case seemed to illustrate a more limited traditional apprenticeship model.

Traditional apprenticeship has similar characteristics to cognitive apprenticeship since cognitive apprenticeship was born from traditional apprenticeship. The key to learning in a traditional apprenticeship situation is effective observation.

Observation of highly cognitive tasks, such as teaching, even coupled with coaching, modeling and scaffolding, is not enough for the apprentice or, in this case, the student teacher, to form a conceptual map of the activity. Expert processes required to solve complex teaching problems require active integration of technical, affective and conceptual knowledge, and this integration is frequently guided by tacit knowledge. Although this cooperating teacher/student teacher pair conferenced frequently and regularly, the cooperating teacher had planned for the conferencing and was very good at subtly explaining and coaching the student teacher towards improving practice. The conferences, however, remained, from the first to the fourth conference, very teacher directed and rarely presented opportunities for the student teacher to articulate or reflect on her own performance. Little opportunity was demonstrated for the student teacher to develop or re-develop her goals, or for a conceptual map of competent practice to be established. The sequencing of activities started in a local format and then spread to global issues. Too many instances of

task diversity and complexity existed before the student teacher was ready to perform those tasks relative to an intrinsically developed goal or conceptual map of not just the content parameters of the subject, but the role of the courses within the department, the school, and, in the case of some of the coursework, the community as a whole. As a result, many of the cognitive apprenticeship framework elements, both global and specific, were applied unsuccessfully. Consequently, both the student teacher's and cooperating teacher's reflective statements clearly illustrated their frustrations with the experience. This pair was an example where most of the elements of the framework were demonstrated but were applied ineffectively. This case illuminated the potential of the cognitive apprenticeship framework as a professional development tool. Had the cooperating teachers in this study received training in using the cognitive apprenticeship framework to guide their supervision of student teachers, the frustration experienced by this pair and other pairs could have been reduced, and the practicum experience could have been more beneficial to everyone.

COGNITIVE APPRENTICESHIP AS A PROFESSIONAL DEVELOPMENT FRAMEWORK

The results of this investigation indicate that the application of the cognitive apprenticeship framework to the supervision of student teachers would be beneficial as a guide during conferencing episodes and in planning the evolution of the entire practicum. This observation held for those pairs who remained together through both student teaching blocks and for those pairs who worked together for a single

teaching block. In both short and long term placements, cooperating teacher critical behaviour included establishing the necessary safe environment, presenting student teachers with the ways and means for developing a conceptual map of teaching tasks, providing the important situated sociological aspects the teaching community, and, through it all, supporting the development of content knowledge and the related heuristic and control strategies. The very complex task of facilitating the development of student teachers could be made less complex by providing cooperating teachers with the cognitive apprenticeship framework as their own conceptual map to support the development of teaching expertise.

If the task is complex to begin with, would it not make sense to support the explication of the complex cognitive tasks with an applicable cognitive framework? McIntyre and Killian (1987) examined the effects of placing student teachers with trained and untrained cooperating teachers. Their results indicated that the student teachers placed with the trained cooperating teachers who used a systematic approach received significantly more feedback and were significantly more involved with students. Similarly, even the low level of structure created by the requirements of the research study seemed to have a positive effect on the supervision process. The student teachers who participated in the present research study stated in their reflective statements and in the focus group sessions that they gave and received more feedback in this practicum setting than they had in past placements and felt that it was a direct result of being participants in the research study. Even the few student teachers who had frustrating experiences wrote in their reflective statements

that they learned more from this practicum experience than they had in all of their previous experiences together. Those student teachers who were participating only in the focus group sessions and were not paired with cooperating teachers who were participating in the study, reported that they did not receive the same quality or quantity of feedback as the others did. Did the research study, itself, skew the experience for those who participated in the study? Yes it did- but only in the sense that the student teachers and the cooperating teachers were expected to conference at least once a week and reflect on that conferencing experience. This conference/ reflection process facilitated explicit attention to making specific choices and drawing conclusions for further discussion in the next conference. Cooperating teachers were also provided with a discussion forum in the form of focus group sessions where the questions asked and the answers generated by the group provided ideas for further examination and inclusion in future conferences with student teachers. The cooperating teachers were also quick to state that, although they had moments of frustration, participation in the research made for a more fruitful and satisfying supervision experience. Even the limited structure provided by the research protocol had a positive effect on everyone who participated in the study. The results presented in chapter 4 suggest that the interaction between cooperating teachers and student teachers can be effectively characterized by the cognitive apprenticeship framework. These additional observations with respect to structuring interactions across a practicum suggest that the cognitive apprenticeship framework could provide an effective conceptual map for guiding an explicit and systematic approach to student teacher supervision.

Clarke's (1995) research and the present study demonstrate that, for many of the same reasons that preservice teachers are required to complete a practicum before being licensed to teach, potential supervisors of those student teachers would benefit from completing a supervision practicum or professional development program before being engaged as a cooperating teacher. Further evidence to support providing instruction on the nature of supervision was provided by one of the less experienced cooperating teachers when he stated very clearly how much he felt he learned from participating in the research study. Although his involvement in this study required considerable more time and effort than he was accustomed to giving to previous supervision tasks, he felt that the focused and planned nature of his supervision, coupled with being provided with a forum to discuss his beliefs and ideas (the focus group sessions), made for a much richer learning experience for his student teacher.

In retrospect, one of the surprising (and not surprising) discoveries during data analysis was the lack of evidence of two of the specific sociology categories, exploiting cooperation and exploiting competition. This discovery was surprising because so much emphasis is placed on cooperative learning structures in the student teachers' prior coursework. In addition, large, diverse schools, such as the site where the study was carried out, depend on intra and intergrade teams to plan and consistently carry out curricula. Without cooperative and comparative structures, little consistency across or throughout curricula would exist, and grade level subject

progression would be impossible to organize. Small and large team planning efforts by the school's staff provide the foundation for the learning plan. Despite the importance of interaction with others in the experiences of both student teachers and cooperating teachers, there were few formal opportunities for student teachers to spend time working with each other in the practicum setting. Consequently, there were few opportunities to compare different kinds of teacher thinking or different teaching experiences. More emphasis could be placed on providing the necessary opportunities for student teachers to exploit learning through cooperative and comparative processes during the practicum. Student teachers learn the teaching skills in the context of their application to realistic problems within a culture defined by and focused on expert practice. Any strategy to share experiences multiplies the exposure of individual students to expert practice.

Another consideration with respect to the use of interaction between student teachers during the practicum is that within this culture of expert practice exists yet another subculture defined by and focused on its own practice-the culture of being a student teacher. Collins, et al. (1989) suggest that certain aspects of the organization of the teaching /learning environment encourage positive beliefs about the nature of learning and the learner's motivation, confidence and orientation towards solving problems. Structuring the social context of the student teacher subculture within the larger professional culture of the practicum encourages the development of positive beliefs and sets the stage for productive cooperative and comparative peer interaction. Student teachers need to learn from one another first

and find comfort in collaborative processes before they can learn to draw on the collective wisdom of other, more expert practitioners.

RESPONSES TO THE RESEARCH QUESTIONS

The responses in this section are based on the interpretations of the results of the entire data set and are organized to respond to the questions which guided this research.

Question #1

Are the global elements of content, method, sequencing and sociology of the cognitive apprenticeship framework reflected in the conferencing experiences of student teacher and cooperating teacher pairs?

The global elements of the cognitive apprenticeship framework are reflected in the conferencing experiences of student teacher/cooperating teacher pairs. All of the global elements were reflected in the conferencing episodes collected from the pairs. Individual pairs may have illustrated one global element more than another and at different times in the relationship during the overall experience, but all of the pairs illustrated all of the elements. The greatest differences between pairs occurred in illustrations of the specific categories within each global element. These variations in specific examples are not surprising since guiding the development of a novice in any learning task will be dependent on a variety of factors. In the case of preservice teachers, the factors will include, but are not limited to, the student teachers' subject

knowledge base, previous seminar and school experiences, retention of previously learned teaching skills, attention to and focus on a variety of issues within university courses and previous university programming, and their intuitive sense or lack of sense for teaching. One constant in this highly variable process is the presence of the global elements of content, method, sequencing and sociology. As stated in the methodology chapter, the data collection methods chosen for this study were chosen not only to capture salient behaviours between cooperating teacher/student teacher pairs, but to assess the suitability of the structure and ideology of the cognitive apprenticeship framework as a conceptual framework to guide the conferencing process.

Question #2

What other factors emerge as important to facilitating the development of preservice teachers during the student teaching experience?

A number of emergent factors were illustrated in the data in addition to the cognitive apprenticeship framework elements. Factors ranged from the individuals' perceived benefit of actively preparing to conference with each other to changes required in the structure and content of university coursework to enhance preservice teacher preparation. The emergent factor which was cited or implied most frequently by the participants was the need for organized, directed, planned and frequent conferencing between the cooperating teacher/student teacher pairs. Second, student teacher responses to criticisms of classroom performance were better received and more

likely to be acted upon if the conference began with a synopsis of the positive aspects of the student teachers' performance. Third, for the pairs in which the cooperating teachers specifically referred to the task of supervision as a team effort between themselves and their student teachers, the pairs were more likely to experience a very open, flexible and positive on-going relationship in which both the cooperating teacher and student teacher could develop a rapport in an environment conducive to the learning and growth of both participants. Fourth, clearly communicated expectations, or the lack of them, formed the basis upon which the learning flourished or floundered, and clear communication was deemed equally important from both the cooperating teachers and student teachers. Fifth, each student teacher's self-realization moment in the first or second conference in the first teaching block had a positive impact on the student teacher's ability to begin to use the criticism from their cooperating teachers as a growth tool and to begin to learn to self-evaluate. Sixth, although goal statements were made and subsequently modified by the cooperating teacher/student teacher pairs throughout the study, it was somewhat surprising that the student teachers' perception of goal attainment did not always match the cooperating teachers' perception of the quality of the student teachers' practice. Seventh, providing depth and breadth of experience for student teachers during the practicum was perceived to be an important factor. However, another unexpected result was the need to provide more depth than breadth in the experience. Student teachers found themselves somewhat overwhelmed by the necessary preparation required to teach across several grade levels or in both their major and minor during the first teaching block. Adding to the difficulty of having

to learn so much about expert practice (multiple content bases and performance techniques being of greatest concern in early data analysis) was the difficulty of trying to form a positive relationship with two or more cooperating teachers. Eighth, the cooperating teachers in this study suggested that the student teachers' time in the school setting should be increased to include more 'blocks' of time throughout the certification year with the idea that more frequent and concentrated experiences would provide a more meaningful experience to the preservice teachers.

Question #3

Is the cognitive apprenticeship model an effective tool for understanding or enhancing the learning that takes place in conferencing between cooperating teacher/ student teacher pairs?

The results of this investigation demonstrate that the cognitive apprenticeship model is an effective tool for understanding or enhancing the learning that takes place in conferencing between cooperating teacher/student teacher pairs. The cognitive apprenticeship model's four global elements - content, method, sequencing and sociology - and the corresponding specific categories within each global element were reflected in the analysis of real-time audio-taped conferences. These elements and categories were observed across a variety of grade and course levels and across a variety of academic and technical courses. Both the global elements and specific categories were evidenced across data sets regardless of grade, course or subject area, with the exception of two specific categories within the sociology element. The

absence of comparative and collaborative categories was due to a lack of explicitly arranged group learning opportunities in the practicum setting. The frequency of illustration of the categories within or across data sets changed from one pair to the next, but only in as much as the nature of the discourse changed between pairs in regards to the grades being taught, course or subject area being discussed.

Further to the changing nature of the discourse between the pairs and the frequency or depth of discussion relative to the specific categories within the global elements was the observation that, if the subject under discussion between the pairs was more technical, the advice given during the conferencing was more concrete. The corollary was also true; if the subject matter was more abstract, the advice given during conferencing was less structured and more open to interpretation.

Consequently, the conferencing style of the cooperating teachers who taught more interpretive subjects, such as English or Social Studies, was much more abstract than that of the cooperating teacher who taught Human Ecology. Cooperating teachers who taught in the Science areas tended to exhibit conferencing styles which fell somewhere in between on the interpretive - concrete continuum and seemed to shift their styles from more interpretive to more concrete as the discussions with the student teachers changed between topics about conceptual content, heuristic or control strategy knowledge to topics about the execution of a lab activity.

English/Social Studies teachers used abstractions about the connection of literature or past historical events to current events in the classroom as the means for discussing the process of learning to teach. The Human Ecology/Industrial Arts cooperating teachers were very careful to direct student teacher attention to the

execution of performing teaching tasks and finding ways to help to the student teachers apply that knowledge in the future. Fewer abstractions were raised in the technical areas without being grounded in the purpose or application of their use. If the cognitive apprenticeship framework was applied in a directed and conscious manner to the task of supervision, the perception of practice would match the reality of practice more frequently. Cooperating teachers could use the framework to guide the conferencing episodes and structure the student teachers' experiences to include all four global elements of the cognitive apprenticeship framework which were illustrated in this study but to include them with a focus. Conference data files illustrated very clearly that some of the specific framework categories were demonstrated with less clarity than was required for understanding the tasks' contextual usefulness, or in some instances, were not reflected at all. Examples here include mismatched perception and reality of goal attainment and practice skills, the lack of illustration regarding cooperating teacher - directed exploration tasks, the frustration demonstrated by the student teachers regarding the tacit classroom management skills required, and the emphasis both cooperating teachers and student teachers placed on situating classroom practice within the larger contexts of the subject area departments, the school and the community. Examples of categories in the cognitive apprenticeship framework that were not demonstrated in the results of this study were the specific categories of exploiting cooperation and exploiting competition within the context of the conferencing episodes. Although student teachers were provided with a forum to discuss aspects of their experience in the focus group sessions, the results of this study suggest that cooperative exercises

designed to provide student teachers with a forum to regularly discuss and compare experiences would support the development of cooperative learning skills, between and among colleagues, which was deemed as an important skill to learn to teach by both the cooperating teachers and student teachers.

It is also not surprising that evidence of the model existed in a variety of grade, course and subject settings. However, the lack of evidence of portions of the global elements in the cognitive apprenticeship model was, in part, responsible for the gaps in the student teachers' understanding of the skills required to become competent beginning teachers. For example, the lack of teacher-directed and student-initiated exploration instances toward the end of the first teaching block highlights the importance of developing consistency across supervision situations. Since subject areas lend themselves quite naturally to providing a rich basis for demonstration and participation in the cognitive apprenticeship framework, it would be useful to teach cooperating teachers about cognitive apprenticeship. As the discussion of cross-disciplinary conferencing styles reveals, some disciplines lend themselves more naturally to some elements of the cognitive apprenticeship framework than others. For example, articulation of procedures was easier for student teachers describing a technical process than an interpretation of a poem. Explicit knowledge of the cognitive apprenticeship framework can provide discipline experts with a means for stimulating and creating opportunities within the less transparent elements to furnish their student teachers with a more complete practicum experience.

Using the cognitive apprenticeship framework in a directed sense and structuring the conferencing experience to purposely reflect the cognitive apprenticeship framework would provide a greater likelihood of presenting the student teacher with a richer and more complete practicum experience. Based on the results of the present research, it is recommended that cooperating teachers be provided with an opportunity to learn about and practise using the cognitive apprenticeship framework as a means for conferencing with student teachers and guiding the practicum experience. The data clearly illustrate that both experienced and inexperienced cooperating teachers felt that the practicum experiences were enhanced for themselves and their student teachers by having focused and regular conferences, writing reflective statements after each conference and participating in group discussions with their peers.

The flexibility of the cognitive apprenticeship model to be evidenced in a variety of teaching situations, and specifically within the natural and extremely important aspect of conferencing, suggests that it was an appropriate tool first to evaluate the nature of the conferencing between the cooperating teacher and student teacher pairs and second, to use the model, specifically the method categories, to teach cooperating teachers more effective and consistent student teacher supervision strategies. All of the cooperating teachers who participated in this research are highly effective classroom teachers. Some of them intuitively demonstrated the cognitive apprenticeship framework more completely than others. For those who did demonstrate the cognitive apprenticeship framework, the corresponding student

teachers had a richer, more holistic experience during their practicum since more of the situated and complex culture and nature of teaching was revealed. Thus, the transition from 'thinking like a student' to 'thinking like a teacher' was achieved with a greater understanding of how all of the component parts fit together to create the whole. The lack of consistency of illustration of the categories in the cognitive apprenticeship framework across the conference data sets suggests that, although the global elements were present, opportunities to incorporate the specific categories to enrich the experience were not seized. The opportunities were missed because the cooperating teachers were not always aware that they existed nor that these opportunities played an important role in the development of their student teacher. Moreover, the cooperating teachers were not aware that there were other issues lurking beneath the conferences. Examples included beginning conferences with the positive aspects of the student teacher's performance not only to promote the retention and refinement of the skills, but to continue to build the student teacher's self-confidence; the importance of planning the conference and conferencing regularly and frequently; the need to spend some time reflecting on the conference to plan effectively for the next conference, and to develop classroom activities to assist the student teachers to reach their goals; to communicate goals and expectations clearly and revisit the goals and expectations from time to time for modification; to be honest and fair in the evaluation of student teacher performance during conferences; to try to view the supervision task as a team effort where even the most experienced cooperating teacher could learn something new about the students in the classroom, the process of supervision and teaching in general. Since

student teachers consistently cite their student teaching experience as the most valuable part of their post-secondary education experience, it would be useful to make that experience as meaningful as possible. The results of this investigation suggest that changing the effectiveness of student teaching experiences for beginning teachers will require a partnership between Faculties of Education and schools in which the third year seminar and final or certification year practicum experiences are to occur. Adjusting programming structures and coursework in the university setting to provide a truer reflection of the reality of practice and providing cooperating teachers with a means to maximize the learning opportunities of the student teachers once they are in the school setting will provide the children of the future with higher quality educators in our schools because the 'rookie' teachers and the seasoned veterans will have benefited from the wisdom of experience. The cognitive apprenticeship framework provides cooperating teachers and post-secondary institutions with a rich and powerful resource to begin learning from the experience of others.

RECOMMENDATIONS FOR THE SUPERVISION OF STUDENT TEACHERS

Each of the recommendations listed below is described in terms of its general application to the supervision of student teachers. Following each general recommendation, where appropriate, is a description of how the recommendation specifically applies to the individual participants in the supervisory process. The recommendations are listed in the order in which they could be implemented.

- **Communication** - clear, ongoing communication must exist between and among the participants involved in the supervisory process. The analysis of the data indicated that success during the practicum depends on it.
- **University setting** - the development of communication strategies for partnerships with the host schools must include continual and regularly scheduled contact throughout the duration of the student teaching practicum. 'Conferencing' between the pre-practicum institutions and the schools should include the salient features of the practicum program and the partnered institutions' expectations of each of the participants in the supervisory process, namely, the university, the Faculty of Education, the faculty advisors, the school, the cooperating teachers, the student teachers and the lead teachers in the host schools. Faculty advisors need to be available to meet with the cooperating teachers and student teachers regularly and frequently.
- **Cooperating Teachers** - conferencing with the student teachers must occur regularly and frequently. Conferences should be focused on and planned to include a discussion of the salient features of the student teachers' performance, direction for the skills the student teachers need to acquire, the sociological contexts of the community of practice, and goals, roles and expectations between the pairs of cooperating teachers and student teachers. Conferences were deemed to have a greater impact on the efficacy of supervision if they began with the positive aspects of the student teacher's performance, followed by the aspects of

performance which required improvement. Cooperating teachers and student teachers felt a greater level of satisfaction with the supervision if the cooperating teachers viewed the supervisory process as a team effort between him/herself and the student teacher. The 'team' relationships were more likely to experience open, flexible and positive on-going relationships.

- Student Teachers - the students should identify their goals and expectations and communicate them clearly to the cooperating teachers, faculty advisors, and lead teachers (where appropriate). The student teachers need to assume responsibility in the ongoing communication process.
- Pre- and Co-Practicum Programming - Analysis of the data indicated that pre- and co-practicum (Appendix J) programming must reflect subject (Appendix J) and content (Appendix J) areas as taught in the schools more closely. It was observed by both cooperating teachers and student teachers that coursework before and during the practicum experience needs to be linked more closely to the practice setting.
- University setting - curriculum and instruction courses in the various teachable major and minor subject areas should be based on the provincial curriculum guides. Student teachers and cooperating teachers were alarmed by how ill-prepared student teachers were for practice teaching within the different content areas. Faculty advisors need to be aware of current

methodological practice and a variety of applications of the methodology in the practice setting.

- Cooperating Teachers - should continue to offer their time and expertise to seminar courses in the schools (Appendix J) and to the university as guest lecturers to support the development of multiple models of expertise for the student teachers.
- Student Teachers - should take the initiative to investigate multiple models of expertise in the university setting and in the practice setting to test theories for teaching and learning with greater efficacy for application in future teaching opportunities. Investigation of a variety of expert teaching models within their content areas, both at the university level and in the practicum setting, could help to alleviate some of the perceived theory-practice disjuncture.
- Practicum Scheduling - the student teaching program currently places the student teachers into the practicum setting for one week of observation at the beginning of the school year, observation experiences one day per week for eight to ten weeks and then concludes the fall term with a five week teaching block. The winter term begins with the one day per week observation period for eight to ten weeks and again concludes with a five week teaching block.
- University setting - Recommendations from the cooperating teachers and student teachers suggest that the one day per week observation days be changed to a different day of the week. Scheduling observation days on Fridays were perceived to be of little value as the end of the week is typically

when formal teaching situations are winding down in the schools.

Scheduling observation days early in the week would be of greater benefit to the student teachers. The cooperating teachers and student teachers also would prefer to have fewer weeks of observation and more time in the teaching block.

- Cooperating Teachers - It was observed in the data that cooperating teachers who were paired with the same student teachers throughout the year long practicum placement had greater success as supervisors due to the trust and communication skills which were developed between the pairs. Where timetabling and scheduling permits, cooperating teachers and student teachers should remain together for the duration of the practicum experience as it was clearly illustrated in the data that the depth of the student teaching experience was more important than the breadth of the experience in terms of learning the tasks related to teaching expertise.
- Student Teachers - It was observed in the data that student teachers who had only one cooperating teacher had greater success in acquiring performance skills than the student teachers who had two or three cooperating teachers in the practicum setting. Where scheduling and timetabling permits, student teachers should be paired with a cooperating teacher in their major subject for the duration of their practicum experience, and include the second cooperating teacher and the second or minor teachable content area in the second term only.

- **Goals, Roles and Expectations-** Each participant in the supervisory process must be aware of his/her own goals, roles and expectations of the supervisory process. In terms of the partnered institutions, this means that each must have clearly defined responsibilities and be held accountable for fulfilling their intended obligations to the process.
- **University setting -** The data indicated that, though the institution was clear about its intended goals for the student teachers, no guidelines were communicated in terms of the institutions' expectations for the roles of cooperating teachers or in communicating the goals and expectations of the institution for the student teachers to the cooperating teachers. Likewise, definition of and accountability to the goals, roles and expectations of the faculty advisors should be communicated clearly to all participants in the supervisory process.
- **Cooperating Teachers -** Early conferencing episodes with student teachers should include a clear definition of the cooperating teachers' goals for themselves in terms of their supervision duties with the student teachers. This discussion should also include their perceived goals for the student teachers. Goals, roles and expectations should be revisited regularly so that they can be modified as growth occurs.
- **Student Teachers -** The students should discuss their goals and expectations of the supervisory process and the practicum experience with the cooperating teachers and faculty advisors early in the practicum experience so that they

can measure their growth against the goal statements. Goals should be revisited regularly throughout the practicum experience and modified as growth occurs.

- **Cooperative Learning Opportunities**-Explicitly arranged group learning activities which compare and contrast the student teachers' performance and movement toward expert practice must be included in the practicum experience. The research illustrated that, within the culture of expert practice, there exists another culture of practice. This culture of practice is that of the community of student teachers.
- **University setting** - Within the pre- and co-practicum coursework, more opportunities should be explicitly arranged for preservice teachers to discuss their experiences with each other and an expert within their discipline area.
- **Practicum setting** - During the practicum experience, opportunities should be explicitly arranged for the student teachers to discuss their experiences with one another and to compare and contrast other student teachers' processes for learning to teach so that they may benefit from the cooperative learning structures within the group setting. Learning from each other in a cooperative environment will prepare the student teachers to participate in and learn from the cooperative planning and teaching opportunities as they arise in the practicum setting.
- **Consistency Measures**-Due to the many factors which influence the nature of learning to teach, consistency measures need to be developed to provide evidence

that standards of efficacy are being met at all points during the practicum experience.

- **University setting** - The culture of practice, as defined in the post-secondary setting, provides a rich resource for developing preservice teacher knowledge within a variety of categories. However, the rich diversity in the pre-practicum setting creates its own inconsistencies in the application of the cognitive theories. Evaluative tools need to be developed to measure the effectiveness of the programming and structure of pre- and co-practicum experiences so that consistency can be achieved across program structures.
- **Practicum setting** - Consistent evaluative measures must be developed for use in the practicum setting to support the ongoing growth and development of both cooperating teachers and student teachers. Progress reports which explicitly identify the experiences and acquired skills of the student teachers under a variety of practicum experiences should be developed and reviewed regularly and frequently to assist the student teachers' growth towards expert practice.
- **Evaluative Measures for the Design of Post-Secondary Programming and the Supervision of Student Teachers** - The cognitive apprenticeship framework identified and described four global elements which encapsulated the salient features of effective post-secondary program and coursework design and the features which holistically prescribed the necessary cognitive and metacognitive characteristics included in the nature of learning to teach. The framework accounts for the complex and uniquely situated culture of practice

and furnishes the participants with a variety of viewpoints from within the community of practice. Using the cognitive apprenticeship framework to evaluate the current programs and supervision processes illuminated the qualities inherent in an effective practicum experience. The cognitive apprenticeship framework should be used as a guide for designing future supervision processes.

- **Professional Development for Cooperating Teachers -** Cooperating teachers should be provided with the opportunity to learn about and use the cognitive apprenticeship framework as a means for the supervision of student teachers. The framework provides guidelines for teaching through cognitive apprenticeship while capitalizing on the wealth of experience of the participants. The framework also provides a structure for situating the contextual nature of the learning within its culture of practice. Following the cognitive apprenticeship framework could provide the consistency and the communication structure for more successful supervision of student teachers.
- **University setting -** It would be useful to provide coursework set in a cognitive apprenticeship framework for potential and experienced cooperating teachers in effective supervision of student teachers and to assign accreditation to this coursework towards graduate degrees. At present, this type of coursework is not available (University of Manitoba General Calendar, 1997-98). Encouraging teachers to look towards the university setting for direction in learning about the unique qualities inherent in the supervision task and providing solutions to the often frustrating experiences

recounted among practitioners would enrich the overall practicum experience.

- Practicum setting - Cooperating teachers would benefit from instruction in the execution of the cognitive apprenticeship framework as it applies to the supervision process. Professional development time should be set aside within the schools to provide teachers with application techniques.

The recommendations listed above were written to reflect the all-inclusive nature of the cognitive apprenticeship framework. In summary, applications of the recommendations suggest that:

- clear and direct communication strategies be developed between and among the participants involved in the supervisory process. The success of the student teaching practicum depends on it.
- goals, roles, expectations, action plans and intended outcomes of the programming structure, the supervisory process and the individual participants be developed and revisited by the supervisory participants regularly to support differential needs with regard to educating today's teachers.
- regular, frequent, planned, and focused conferences occur between the cooperating teachers and student teachers.
- conferences begin with the positive aspects of performance.

- wherever possible, cooperating teacher/student teacher pairs remain together throughout the year-long school practicum experience.
- where keeping cooperating teacher/student teacher pairs together is not possible, and the pairs must change partners at a term or semester change, that a comprehensive evaluation follow the student teacher, outlining goals/skills which were achieved and those which still need to be achieved to support continuous development of the student teacher's skills without interruption.
- the cognitive apprenticeship framework be used to design and implement a comprehensive supervisory program to enhance the learning which takes place between cooperating teacher/student teacher/faculty advisor triads.
- coursework at the university level before and during the student teaching experience should more closely and consistently reflect the practicum setting. This includes, but is not limited to: teaching student s communication and observation strategies, use of curriculum guides, connections between major/minor content areas and methodological application techniques, and inclusion of a variety of models of teaching expertise within the specific content areas being examined. The additional/new coursework needs to begin at year one in the program , and continually revisited and reapplied throughout regular coursework during the full program.

- observation periods for student teachers need to be more directed. All participants within the supervisory process need to develop methods for providing students with concrete observational guides which will help them to recognize the cause and effect of expert practice, the implications of the larger culture of practice on the classroom setting and require active participation on the part of the student , to seek out the roles and relationships of the details of expert practice.
- the onus of responsibility for learning about the complex nature of teaching, detailing the student teaching process to reflect the practice setting and designing a holistic practicum experience is the responsibility of all of the participants in the supervisory process, namely, the university, the faculty, the faculty advisors, the cooperating teachers, the student teachers and the schools which host the practicum experiences.
- observation days in the practicum setting need to be scheduled on any day of the week, but Friday.
- schools must provide opportunities for student teachers to compare their learning processes with one another and to learn cooperative planning structures so they may be able to function independently and in teams as competent beginning teachers.
- concrete evaluation techniques need to be developed for measuring the success, growth and development of the student teachers, the supervisory

process, the participants in the supervisory process and measured against the intended outcomes of the student teaching program.

- a specific guide/hand book should be developed for each of the Seminar and School Experience Courses and Student Teaching to differentiate expectations and intended learning outcomes between the courses.
- the cognitive apprenticeship framework will serve as a comprehensive guide for developing communication, observation and supervision strategies, and evaluation and consistency measures for programming and conferencing aspects of the student teaching practicum.
- graduate coursework about the cognitive apprenticeship framework and its usefulness for demystifying and guiding the complex nature of the supervision of student teachers should be made available to cooperating teachers.

SUGGESTIONS FOR FUTURE RESEARCH

The following are several suggestions for future research:

- A replication-'type' study in a similar setting to see if, under similar circumstances, the results are the same. The word 'type' is used here to recognize that, in qualitative research, exact conditions would be impossible to re-create. However, given certain similarities between diverse, suburban middle and senior high schools, it would be possible to re-create similar site, participant, and data collection and analysis conditions.

- A replication-'type' study in a different setting. The setting could be in an elementary school, or in a different professional field, where clinical practise similar to the seminar and school experience program and the student teaching program is expected as part of the practical component towards receiving a university degree.
- A pre- and post- test study conducted on the effect of the recommendations based on the present research.

CHAPTER 6: REFLECTIONS

This final chapter is intended to clarify the decisions and choices I made as this research developed. According to Lincoln and Guba (1985), the inclusion of an audit trail, which this chapter serves to provide, is a necessary conclusion to help the readers understand why the researcher chose to make certain decisions as the research progressed. These decisions and choices included the topic to investigate, what literature to review, what questions to ask, where and how to collect data, and how to analyze and interpret the data. These were choices I knew I would have to make when I began. I also knew that situations would arise during the data collection and interpretation process where I would have to make choices not really knowing what the outcomes would be. In these situations, I would have to rely on my own instincts and experiences to guide me, and I could also rely on the experience of others. My reflections on these decisions are based on a detailed journal I maintained during the research process.

I count myself as being very fortunate to have trusting, comfortable, friendly and collegial relationships with the people with whom I work, from whom I took classes and for whom I work. If I did not have all of that expert knowledge from which to draw strength and build new knowledge regularly, I would not be able to teach, nor would I have been able to conduct this research study. I have always believed that expert knowledge is not contained in any one person, book or research study.

Expert knowledge about a particular topic resides in communities of researchers and practitioners and is useful only if it is shared, applied, tested, refined and applied again. Based on the premise that we can learn from the experience of others, and hence, create our own wisdom, I chose to conduct this research using qualitative methods. I do not believe that the context-dependent nature of learning to teach could have been accurately described using quantitative measures. In this chapter, I will briefly explain, how I arrived at my decision to investigate the conferencing experiences between cooperating teachers and student teachers, and how the many unexpected factors surrounding this project influenced the choices I made in designing the investigation and interpreting the results.

MOTIVE

I have several strong beliefs which guide me on a daily basis. One of those beliefs is that teaching is the second most important job in the world. Doing it well is crucial to supporting the formation of a civil society. From my experiences with many different teachers over the years, I have found that I am not the only teacher who feels that teaching is an important job and that, to a greater or lesser degree, my colleagues hold similarly high standards for their teaching practices. It is the desire to continually improve my own teaching skills which led me on this quest for another degree.

One of my other guiding principles is that, if you are not part of the solution, you are part of the problem. I, like my colleagues, used to complain about how poorly

prepared my student teachers were for their student teaching experiences. But unlike my academic colleagues, I had the 'luxury' of having some student teachers who, as unprepared as they were, were better prepared for their practicum experiences than a lot of the others. It seemed that, since I taught in a technical field and always supervised student teachers who were learning to teach Industrial Arts subjects, that my student teachers were, on average, better prepared for the 'learning-to-teach' experience than were the academic student teachers. Discussions around the staff room tables seemed to corroborate my feelings regarding the preparedness of the student teachers. I also always felt that, compared to some of the other student teachers who were in the same schools with me during my student teaching experiences, I felt better prepared for my practicum experience than they were. Over the past twelve years, I have wondered why that seemed to be true. It occurred to me that the subject matter for which I was trained to teach must have had something to do with it. There must have been a difference between how I was taught to teach in a technical field and how academic subject teachers are taught to teach. I have held this link in the back of my mind for a long time. As time passed, I found myself actively seeking out a variety of learning opportunities, such as professional development experiences and assessments of my own learning styles and their effect on my teaching styles, which would either prove or disprove my ideas about the nature of learning to teach. Some of those ideas included that learning to teach was a complex process and that the process needed to become more consistent across teaching and learning institutions. The idea that, for whatever reason(s), Industrial Arts student teachers seemed to be better prepared for their student teaching

experiences than other student teachers from other programs though, always held the strongest position. After countless professional development experiences and committee appointments, I still found myself asking more questions about this notion of preparedness to teach but not finding any answers.

As the coursework for this degree progressed, I found myself investigating questions about how we learn how to teach from the perspectives of the various courses in which I had enrolled over the years, but none of the courses held answers. Instead, each course and perspective generated new questions. Was the difference in ability during my practicum a result of the type of transition I had to university- beginning at Red River Community College and then moving to the University of Manitoba? Was the difference relative to the subject matter I taught? Was the difference a result of the way I was taught to view the subject matter and the way I was taught to 'think like an Industrial Arts teacher'? The answers to each of these questions was a resounding 'yes', but none of the individual courses in the master's program provided any specific details as to why. The link between the questions that seemed to have the greatest strength was the notion of how I was taught to think with respect to the act of teaching.

When I was in one of my final graduate courses, I became very interested in the notion of transitions-the transitions which occur between high school and going into the workforce, to college, or university and the eventual transitions from post-secondary education to the workforce. Examination of these transitions produced

yet another series of questions, one of which led me to focus on the transition into the teaching profession. At the time, I happened to have a student teacher, and, after several philosophical conversations with him about his perspective of learning to teach, I found myself wanting to pursue my initial questions even more. Why do some student teachers have greater success with their practicum and, hence, their first few years of teaching, than others?

CARPE DIEM

Some people tell me that I am lucky. They are probably right. However, I do not believe in luck, in and of itself. I believe we create our own luck through a mixture of having learned that which we know and do well, and seizing opportunities to put it to good use. When we do, others perceive us to be lucky because the outcomes of those behaviours and opportunities make us happy and give us a sense of satisfaction. In the spirit of seizing opportunities, three years prior to the commencement of this investigation, a former principal asked me if I would be interested in getting involved with a Faculty of Education pilot project involving Senior Years student teachers. Apparently, this Faculty was interested in 'building a better teacher' too. My role would be to act as a liaison between the Faculty and the school, to support/contribute to the development of off-campus coursework during the practicum, and to act as a facilitator for the off-campus seminar-style coursework. What did I see as a result of this new role?

Motive (my questions) + Opportunity (new student teaching program)

= New Knowledge X 8 Schools involved in the project
 Applicability of use of knowledge generated

= Wisdom of Experience to be included in future programming

I was in my glory!

THE WISDOM OF EXPERIENCE

Support from both cooperating teachers and student teachers for seeking answers to my questions grew as I observed, participated in and compared the learning processes of approximately sixteen fourth year student teachers during the first two years that I was involved in the Senior Years pilot program. Subsequently, I was awarded the facilitation and supervision tasks of all other student teachers placed in our school, whether they were a part of the Senior Years program or not. The men and women involved in the various seminar and student teaching programs illustrated a variety of student teaching models within a wide variety of subjects, across grade levels and across course levels. Discussions with approximately twenty-one men and women over the two years illustrated how different their individual seminar and school experiences, and practicum experiences were, where similarities existed and where there seemed to be consistency during the seminar and school experiences, and practicum experiences. The consistencies in the successful experiences during the process of learning to teach, and, in experiences where the student teachers felt they learned to apply their new skills with greater success, are of particular interest here. A window on the student teaching experience was provided

in a series of noon-hour seminars in which student teachers discussed their experiences. Using a variety of models of expertise in an open-ended way seemed to provide the student teachers with tacit teaching knowledge and heuristic strategies which were not being imparted by all cooperating teachers all of the time. Those who were not receiving some of this necessary information directly from their cooperating teachers were very excited about this new source of information and, after applying some of the techniques, found that teaching did not have to be as frustrating as their initial classroom experiences would have suggested. Did their cooperating teachers not realize that this was information the student teachers required to be able to perform the tasks successfully? Did they forget about this tacit knowledge because, as expert teachers, 'thinking like a teacher' was already rote behaviour to them? Did the cooperating teachers assume that the student teachers had learned the control, learning and heuristic strategies in some previous university or seminar experience?

An insight into how I might answer these questions came during initial meetings with my newly appointed advisor about a research topic. She and I were talking at length about my long standing curiosity about the nature of learning to teach, and she suggested that the thesis requirement was the opportunity to find a solution. The following week when we met, she presented me with a framework she thought I should consider. She seemed to think that I might find it, or parts of it, useful in trying to decide how I wanted to approach the 'build a better teacher' idea I had.

After reading the Collins, et al., (1989) article about cognitive apprenticeship, I knew I had the framework for this research study.

Why did I choose this topic? Because I have always been interested in finding out why some student teachers seemed to be better prepared for the student teaching experience than others. why I am a better cooperating teacher some years than others, how consistency could be achieved during the process of learning to teach, and how to share this new knowledge so that the colleagues who have supported my teaching and learning experiences over the years could use the information to reduce their own frustration with trying to teach someone how to teach. There are so many inconsistencies and determining factors which influence the process of learning to teach. I felt that, if I could find a common thread or a critical determining feature which held the key to the process, then I could make the process of learning to teach more transparent. In the cognitive apprenticeship framework, a description of the importance of conversation and narratives by the experts in a culture of practice suggested that the discussions between an expert and novice were the key to transmitting knowledge underlying expert teaching practice. Guyton's (1989) research took this one step further when she suggested that the conferencing between cooperating teachers and student teachers was the natural forum for discussing planning and observation, reflecting on the practice of teaching, and identifying the elements which affect teaching both inside and outside the classroom. From this point, the topic emerged as stated in the title of this project. Examining the conferencing experiences between cooperating teacher and student teacher pairs

seemed like the most logical portion of the student teaching experience to examine since the literature I had reviewed to this point continually suggested that the dialogue between the expert-novice pairs was the most important aspect in the learning-to-teach experience. Strangely enough, I could find no one who had examined it.

The original research questions which guided the development of the investigation which were those I thought I could answer based on the conferencing process. Following the analysis of audio-taped conferences collected in a pilot study, it became apparent that the questions I had asked were not quite appropriate. Initially I was specifically asking where and how the six teaching methods of the cognitive apprenticeship framework applied to the conferencing experience, but there were too many uncoded passages in pilot data files. These data illustrated the six teaching methods but also spoke to issues of content, the social structure of the school environment, and other issues involving the management of the tasks. Focusing on only one of the four elements in the cognitive apprenticeship framework seemed to be too narrow when there appeared to be other issues involved in learning to teach. After reviewing the global and specific elements of the cognitive apprenticeship framework, and performing another analysis of the pilot data files with the full framework, it became evident that the full cognitive apprenticeship model would provide a more comprehensive interpretive framework. The global elements and their specific categories of the cognitive apprenticeship framework then became the *a priori* portion of the coding grid.

Like the complex and interwoven nature of learning to teach, my personal and less than scientific investigations into the nature of learning to teach were not the only factors which influenced my decisions about how to develop this topic, to review the applicable literature, to choose the research questions and the conceptual framework and to develop the coding grid/analysis categories. During my initial participation in the student teaching program as lead teacher, evidence in support of the Clarke (1995), Guyton (1989) and Kagan and Warren (1990) studies was being illustrated: not all successful classroom teachers were able to supervise student teachers with the same kind of success. Why? Because no one ever showed them how, explained why certain aspects of the student teaching experience were just as important as others, or encouraged the cooperating teachers to discuss how they worked with student teachers to develop common methods for instruction, developed acquired skills evaluations, and internalized culture of practice information. These examples were a few of the topics that some cooperating teachers seemed to find the means and opportunity to share with their student teachers while other cooperating teachers did not. Discussion of these and related issues with cooperating teachers, student teachers, principals, faculty advisors and university faculty involved in a Senior Years "Pilot Project" led me to believe that my initial instincts, with regard to the quality of a student teacher's practicum experiences, were related to the consistency with which the principal participants supervised the practicum experience. Further investigation into the key issues could only be provided by asking the participants who were at the heart of the discussions- the cooperating teachers and student

teachers- to provide the necessary information about how to make the experience more beneficial to everyone.

It was clear to me that the resource base for performing the research was in my own school. My involvement in the Senior Years program had provided some valuable insights about a number of issues in need of clarification. Facilitating and developing the student teachers' off-campus coursework had brought me closer to and provided many insights into my colleagues' strengths, their concerns regarding student teaching experiences, and their abilities to be successful supervisors.

Working with the student teachers for those two years on an intimate level as mentor, evaluator and, sometimes, 'Mother Hen' allowed me to gain insight into similar issues as those which were described by the cooperating teachers, but from a different perspective. Given the evidence I had gathered to this point, and insight into the untapped opportunities before me, I would examine the conferencing experiences between the pairs of cooperating teachers and student teachers to see if the cognitive apprenticeship framework could help shed some light on a very complicated learning experience.

THE METHODOLOGY

I really despise attending any kind of inservice or professional development event where I leave the event having learned absolutely nothing useful. It is with this idea in mind, that I continue to plan the noon-hour seminars for the student teachers who are in my care. Drawing on the expertise of my colleagues to facilitate the

seminars was, and is, a successful determining feature of the program in our school. For five or six of the observation-day noon-hours, two or three teachers first present their perspective on a particular topic and then spend the balance of the hour discussing the different perspectives with the student teachers. I would select the facilitators for each session so that the perspectives presented on each topic would be quite different from each other, thereby providing the student teachers with a breadth of experience to draw on. I always find it interesting that, although the perspectives of the teachers are different in the way they might approach a particular topic such as unit planning or classroom management structures, the underlying principles for action are consistent. However, as successful as these windows on expert practice have been for providing the student teachers with a glimpse of alternative perspectives, they have not provided a collaborative and comparative forum for the student teachers to discuss their skills with each other. Having had such a rich experience gaining insight into the belief structures and skills of my colleagues, I could think of no other place than the school in which I worked to conduct my research. I selected the facilitators for each of the seminars based on my own experiences with them over the years. Throughout the in-school seminar experiences with them, I learned that, not only did the teachers enjoy and appreciate being recognized for providing a valuable contribution to the student teachers' overall experience, but that, somewhere along the way, I had gained a certain measure of their respect. I suppose that some of that respect was due, in part, to asking them to participate in the seminars to share their experiences with the student teachers. By participating in the seminars, I also learned a great number of heuristic

and control strategies from my colleagues and have since adapted them and successfully implemented them into my daily teaching tasks. Realizing that all of the necessary elements to conduct this research were available to me at my own school, I made the decision to conduct the study in that environment.

My decision about where to conduct the study was followed almost immediately with concerns for my choice to do this. Based on the insights I had gained about my colleagues and their opinions of me, I was certain that if I asked them to participate in this research, they would. I was also certain that when I asked the permission of the principal and the school division to conduct the research in the school, that permission would be granted. My concerns were thus - How was I going to conduct the research so that I would not jeopardize the relationships I had developed with my colleagues which, after the experiences of the last few years with the student teacher program, I valued more than ever? How was I going to conduct the research so that the data collection processes would not adversely influence my evaluative function as lead teacher? How was I going to convince the cooperating teachers and the student teachers that the research would remain anonymous between and among the pairs and that I could perform my tasks as lead teacher, colleague and researcher independently of one another so as not to influence or compromise my professional roles within the school? I promised myself that if it appeared that I could not perform the roles of researcher, teacher, friend and evaluator in such a way that these relationships and roles were not compromised, then the research would stop immediately. However, I hoped that a methodology

could be developed that would permit me to see the research through to the end. The need to perform the research in a venue where I would not have to upset the already complex and puzzle-like balance of my professional life was considerably more pragmatic: I really liked what I did, I liked the people with whom I worked and financially, I was not in a position to seek employment elsewhere if this project could not be executed successfully in my place of employment. If I could not perform the research in my school, I would change my degree program to a comprehensive exam route.

My concern for potential conflicts was at the heart of every decision I made along the way. Operating on instinct and past experience most of the time, I am not sure I could tell anyone how I arrived at some of the decisions I made. Many one-on-one conversations took place with cooperating teachers as I tried to support their decisions with their student teachers and motivate them to follow the research protocol. Many of the cooperating teachers asked me questions which, from time to time, forced me to consider the answers I gave so as not to compromise the confidentiality of participant research files and adversely affect the evaluation of the student teachers. There were times when participant reflective statements were very clear about how one member of a pair felt regarding the attitude and deportment of the other. There were also times when I had to 'check' my personal requirements for getting the participants to comply with the research protocol and weigh the importance of their exact compliance against what my decision might have been in the same situation had the research project not been underway. Thankfully, the

choices I made were the right ones; my roles and relationships are intact and gaining strength as a result. I must admit, though, that I did have a hidden agenda during the development of the research protocol. The 'hidden agenda' was the need to give the participants the opportunity to learn from their experiences. I wanted them to leave the experience wiser for their efforts. I also believed that, if I could provide them with a learning experience where they would be able to recognize their self-growth as a result of participation in the study, then perhaps I could count on their motivation levels remaining high and not have to worry about cooperating teachers withdrawing out of boredom or aggravation as the study progressed. I also hoped to curb withdrawals due to increased workload as a result of the cooperating teachers' participation. The research protocol was going to require the cooperating teachers to work a little harder than they may have been accustomed to, and, at certain points during the school year, their choice to participate was going to cause them some additional workload stress.

Since I could not be present for the conferences between the pairs of cooperating teachers and student teachers, and since I was determined to minimize my influence on the nature of the conferencing between the pairs, I chose to use audio-taped conferences for a primary data source. Keeping personal or confidential discussions confidential, and at the same time providing me with accurate glimpses of the nature of their discussions served two functions: my personal bias concerns were answered with regard to confidentiality issues between and among the pairs since the pairs could choose which conferences to record and submit each week, and I would have

a data source which would provide an accurate picture of the conferencing experience in the setting where the experience occurred. I would get a credible account of the supervision and student teaching experiences in the participants' own words.

I was also concerned about minimizing any additional work for the cooperating teachers. Since cooperating teachers and student teachers typically talk to each other about what happened during the classroom experiences, having them tape one conference per week would not cause the cooperating teachers to rebel about extra work in their already heavy teaching load. I was wrong. For some of the cooperating teachers, the requirements of the research methodology caused some rebellion. After explaining to the cooperating teachers who were finding themselves overwhelmed with the perception that they would have to conference for longer periods of time at any sitting than they were accustomed to, I assured them that a two minute conference could provide as rich a data file as a conference which was an hour long. The cooperating teachers were pleased to hear, once again, that I was not really asking them to do anything different than they normally would do when conferencing with their student teachers, except turn on the tape recorder. The additional workload for the cooperating teachers came in the form of submitting a reflective statement with each audio-taped conference. I found myself having to chase a few of the cooperating teachers from time to time to make sure that the statements were written at least within a day of the recorded conference so that the statements were accurate reflections of the taped and submitted conferences. In one

instance, a cooperating teacher who was extremely busy with the school musical during data collection, did not submit one reflective statement from one of the conferences even though I had reminded the individual several times. I chose not to make an issue of it. Had it occurred again, I might have been a little more emphatic about submitting the reflective statements.

The reflective statements turned out to be important sources of data on their own, while providing valuable sources of reference in interpreting other observations. One of the student teachers raised a concern in her first reflective statement about her hesitancy at mentioning student names from her classes during the conferences with her cooperating teacher. That statement explained the hesitancy in her voice at times during the conference tape. Had it not been for her explanation of that fact in her reflective statement, I might have interpreted the hesitancy in the conference tape to mean something else. I also found that the reflective statements were very valuable for authenticating and clarifying the contexts under which the conferences occurred and thus, served to make my interpretations of the data much more reasonable and appropriate. When the participants were asked to review the Results chapter to confirm the reasonableness of my interpretations, no one questioned the interpretations or suggested that changes be made. To hold myself accountable to the *a priori* framework categories, I did not analyze the reflective statements as a whole data set until I had completed the analysis of the audio-taped conferences. However, I did consult individual reflective statements from time to time before this point. If I was having difficulty transcribing a tape and could not solve the problem

by talking with the cooperating teacher or student teacher about the word or phrase in question, then I read the appropriate reflective statement to see if, as in the example I used above, some explanation existed for the question I had. I also reviewed a few reflective statements during early data collection to see if the primary and secondary sources would indeed be complementary to each other.

Choosing the recorder for the focus group sessions for his or her objectivity, ability to maintain confidentiality and acute listening skills was critical to being able to keep some of my bias concerns in check. The woman who recorded data from these sessions turned out to be the perfect choice for all of the proposed reasons and a few I had not considered. It occurred to me during the first session with the cooperating teachers that, since the recorder had recently completed her own Master's thesis, she would understand the importance of recording the details I had asked for without questioning the need to follow my directions. Her experience with qualitative methods would serve my needs well in that she would understand how important it was to get the participants' words and tone of voice and body language recorded to help establish their points of view. The cooperating teachers also trusted and respected her because of her role within the school and, therefore, felt comfortable talking rather freely about issues as they arose. The data generated in each focus group session was thematically summarized immediately after each session and was used to formulate some of the questions for subsequent sessions. Other questions in the sessions were derived from patterns arising in the analysis of the audio-taped conferences, and some of the questions were derived during the sessions, themselves,

from participant statements. These peer group forums generated information that was also used by the participants in developing their practice. Both cooperating teachers and student teachers attended the sessions with notepads and occasionally would take notes for future reference.

The focus group sessions provided an opportunity for me to share information with participants. One concern focused on changes in the students and teachers participating in the investigation. I had some difficulty in getting some of the cooperating teachers and student teachers who were not part of the audio-taping portion of the data collection process to attend the second and third focus group sessions. When one of the cooperating teachers asked to be excused from participating in the research project all together, the other cooperating teachers asked where she was during the second focus group session. I let them know that she chose to withdraw. I also informed the cooperating teachers about the student teachers who had left the Senior Years program earlier in the term. I then shared this information with the student teachers at their session. I felt that it was important to keep everyone who was involved in the study informed about who was still involved and who was not. I also wanted everyone (particularly the student teachers who still did not know me very well) to become more trusting of my promises about there not being any reprisals towards participants who chose to withdraw. Related to my concerns around changes in participants, I was fairly certain by the end of the first block that another student teacher would leave the program by the time Christmas break was over. I was growing concerned about

having a viable student teacher participant base by the time the second teaching block began. With this concern in mind, I began to investigate how I would apply my secondary sampling method. Shortly after returning from Christmas break, my suspicions were realized. The student whom I expected to leave, did, and another student asked if she could go to another school to complete her practicum. After discussing the issues with her cooperating teachers and the faculty advisor, we all felt that a fresh start would be a cleansing experience for her and she withdrew from the study. I now had to involve a third year seminar and school experience student to fill the student teacher participant complement. I had no idea how a third year student teacher would affect the potential for data collection. However, her participation did not seem to produce data that was any different than the other student teachers, and she was able to participate in the full complement of data collection protocol. Thankfully, the focus group participants continued to be, at least, the participants who were involved in the primary data collection mode, and the data generated in these sessions could be analyzed to see if these discussions were complementary to their conferencing experiences and reflective statements.

In the third student teacher focus group session, the student teachers had an attendance problem. One was away ill, one was affected by a flood which prevented her from spending any time in the school outside the prescribed school day, and one had a personal issue to deal with on the day the third session was to take place. This session had already been rescheduled several times to try to accommodate their needs in this last week of the second teaching block, but, even after making the

adjustments to accommodate them, I still only managed to get three of the student teachers to attend. To collect the thoughts of the absent student teachers on the questions which I had planned to ask at this last session, I had the three absent student teachers provide written responses to the questions and return the questionnaires to me in a timely fashion. The power of discussion was definitely lost in this third session.

During all modes of data collection, I was treated to some insights and a little levity of my own that I had not expected; the good-natured humour of some of my colleagues, and their empathy for my cramped writing hand while transcribing their conference tapes, and their unselfish, appreciative and complimentary comments to me in their reflective statements and during focus group sessions helped motivate my research. It was encouraging to the researcher that the participants appreciated the opportunity to participate because they felt they had learned so much about the nature of supervision by participating and learned ways to supervise that provided greater efficacy in their supervisory roles. Many of them stated during the last focus group session that they would continue to use the supervision processes of regularly scheduled conferencing and writing the reflections. One of the greatest compliments to my research efforts came when, in the third focus group session, one of the cooperating teachers asked if I would continue to facilitate similar group sessions after the study was over. More encouragement was written in the final conference reflective statements from both cooperating teachers and student teachers alike with wishes for success in the rest of the study. Overall, the data collection process was a

success in no small part due to the strong support of the participants for the research project. I had held to my promises to the participants and to myself to maintain the integrity of my various roles. I could stop holding my breath!

DATA ANALYSIS

When I selected the constant comparison data analysis method, I did so because of the complex and interwoven nature of the project. The constant comparison method would provide some structure to the analysis by using the cognitive apprenticeship framework's global and specific categories as the basis for analyzing the data. The constant comparison method also allowed for the analysis to be open-ended and provided a means for the unknown categories to emerge. I transcribed the audio-taped conferences as they were submitted each week with the hope that, if I disciplined myself to do them immediately after they were submitted, I might have a hope of keeping up. I took great care to transcribe every uhh, umm, chair creak and chuckle because it was important to me to get as much information from each taped conference as possible. It was also important so that the level of inference during analysis would remain as low as possible. I made anecdotal comments throughout the transcripts about things like the speed of the narratives, the tone of voice the participants were using, if the participants sounded annoyed or upset or dismayed at the other's comments, and whether or not there was enthusiasm in the pair's voices. These observations were included so that when I began the analysis the actual voices of the participants would be clear in my mind. I also felt that it was important that I transcribe the tapes myself and then type them myself so that I would be very

familiar with the data. If I came across a passage or word which was unclear, I asked the participant to clarify it for me, if he or she could. Sometimes the words were muffled by other sounds, and even the participants had difficulty figuring out what they were. I think that asking for clarification in this manner helped to establish my credibility and my desire to keep the data accurate. If the cooperating teachers or student teachers asked me how the transcriptions were panning out, I told them how painful the transcription process was, and we joked about how well-developed the muscles in my right hand would be when the transcriptions were complete. I also had several people ask to see their pair's transcripts from time to time. Curious about their motivations, I asked one of the cooperating teachers who had come to see the latest tape transcript. He was a little embarrassed when he replied that he forgot to photocopy his reflections and the computer file which held his reflective notes had somehow been corrupted. He could not remember what he and his student teacher had spoken about, and he wanted to prepare for their next conference. Similar conversations took place with several other cooperating teachers. Other cooperating teachers just said they were curious and wanted to see what the transcripts would look like. These conversations provided additional support for my desire to provide the participants with a useful participation experience so that they would see the fruits of their labours during the course of the study rather than having to wait until it was over to find it useful. I think that, because the cooperating teachers were seeing the positive effects of their efforts by the third conferences in the first teaching block, their motivation levels remained high throughout the remainder of the study.

Still other important decision points came during the coding process. When I began data analysis and had established the coding grid for the *a priori* categories, I found that there were passages which did not fit with the *a priori* category definitions. I left those passages uncoded until I had coded all of the conference data files. As I was coding the transcripts, I also searched for individual passages which would serve as good examples to illustrate the definitions of the defined categories in the coding grid and would add and delete examples as better ones would emerge from the data files. As coding continued, I would find myself writing memos to myself about patterns or themes which seemed to be emerging throughout the conference files, and I kept those notes for the final analysis. When I was approximately two-thirds of the way through coding the transcripts, one of the emergent categories became clear. As coding and memoing continued, several other categories emerged. I chose not to stop coding the data files when the first emergent category became clear because I felt that, if the category appeared at that point, then maybe some of the others would emerge if I just kept going. I also thought that the emergence of the categories may only be relevant to the second teaching block transcripts and, therefore, stopping at the two-thirds point where the first emergent code appeared would be a waste of time. After completing the coding of the last third of the transcripts with both the *a priori* and the emergent codes, I returned to the first conference data file from the first student teaching block to determine if the uncoded passages reflected the themes that had emerged during the last third of the data files. The passages had similar elements, and all of the remaining uncoded passages in the

transcripts were coded using the categories which had emerged during coding the last third of the data files. No new categories were identified from these previously uncoded sections. While coding the passages with the emergent codes, I used examples from the data to illustrate the emergent categories in the coding grid in a similar fashion to the way I illustrated the categories for the *a priori* section-adding and deleting examples as the passages became clearer and would stand alone well as examples of the categories.

When this initial coding was complete, I reviewed the conference data files, checking to see if the initial codes were appropriate, and I did find a need to change a few of the codes for passages in earlier data files to make the coding across all data files consistent. While reviewing the coded data files, more large patterns became evident, and I continued writing memos to myself. After the review was complete, I purposefully began looking for patterns and themes across data files, data sets, and the teaching blocks, based on my memos. It was during this purposeful examination that I discovered that the emergent categories had a definite cooperating teacher and student teacher connection. I then collapsed some of the emergent categories and grouped them in the coding grid under the global headings of 'Cooperating Teacher' and 'Student Teacher'. When the pattern and theme analysis of the conference transcripts was complete, I reviewed the reflective statements and tried to code them in a similar fashion to the transcript files. This was a difficult task since the *a priori* categories did not appear as clearly as they did in the transcripts. While reviewing the reflective statements, I noticed that they had some common structural elements

and so I made some notes on the statements where the elements existed. I then listed those elements and reviewed the statements again, this time looking to see in which conferences the elements appeared and the number of cooperating teachers or student teachers who made similar types of statements in their statements. I then reviewed the lists to see if there were patterns and themes which appeared across conference data sets, conference data file groups, or across teaching blocks. After exhausting the patterns and themes from within the reflective statements and their relationship to one another, I reviewed the reflective statements in relation to their specific conferences to check to see why some anomalies may have existed in certain reflective statements, and I recorded any patterns which emerged.

Reviewing the themes and patterns which emerged from the focus group sessions was very straightforward since responses tended to be elicited by specific questions, and I had already thematically summarized the session notes. However, reviewing them after the data analysis was complete gave these themes a whole new meaning. It was uncanny how well the focus group data meshed with the conference transcript files and the reflective statements. The focus group data really served to augment the importance of the patterns and themes which had emerged from the transcript files and the reflective statements.

After seeing how well the three data sources complemented each other and the triangulation they provided, I was pleased with how the many careful decisions I had made throughout the process to insure confidentiality, to capture real-time

conferencing from the participants, and to select the participants really made a significant difference in the credibility and authenticity of the data. The cooperating teachers were represented equally across middle and high school subjects, male and female participants, and department heads and regular teachers. I had representation of academic and technical subject teachers, with cooperating teacher participants at all points along the experience continuum, from barely experienced to very experienced. The audio-taping of conferences took place in an environment where the participants were comfortable but not complacent. In contrast, I purposefully arranged for the focus group sessions to be held in classrooms where none of the participants normally spent their time so that everyone was on neutral ground. I held the first student teacher focus group session over a noon-hour so that the student teachers would not be inconvenienced by having to stay after school. Many of them had jobs that they needed to get to by 5:00 PM. Holding the session over the noon-hour was very difficult due to constant interruptions from the school public address system. As a result, the rest of the focus group sessions were held from 4:00 PM - 5:00 PM. I would begin each cooperating teacher and student teacher focus group session by thanking the participants for coming and informal chit-chat about the quality of their day in case some lingering piece of frustration needed to be vented. I did not want them to vent during the session. I wanted them to focus on the topics as I presented them, and I wanted to encourage any emergent related topics to surface from the discussions. I formally began each session with a synopsis of the questions and their answers from the previous session in order to provide the group with an opportunity to add to or clarify the summarized data. I

also wanted to be sure that the recorder heard the participants correctly and that I summarized and interpreted the session notes accurately.

When the Results chapter was completed, the cooperating teachers each received a copy and were asked to review the contents and make notes in the chapter if they felt that my interpretations were not reasonable, and then they were to return the chapter to me. I also gave them all a copy of the coding grid to help clarify the definitions of the different categories. I had to really hound the cooperating teachers to get the chapters returned. They all wanted to keep the chapter because they felt that there was too much useful information in it to give it up. They wanted to use it as a guide. I was flattered, and I let them keep it. In lieu of receiving written feedback on my interpretations of the data, I accepted their verbal confirmations instead. They were all satisfied with my interpretations as written.

Four of the six cooperating teachers who participated in the full data collection process are continuing to use the conferencing, reflection and discussion techniques established by their participation in the study with their 'new' student teachers in the year after data collection was complete. Of the other two cooperating teachers, one has continued with the 'formal' weekly conferences but has admitted to not carrying through with the written reflections in a detailed fashion, but she does record some points from each conferencing episode to remind herself of what was said. The other cooperating teacher has returned to a preferred method of shorter, more frequent discussions with her student teacher, and is not keeping a journal or

reflective log. Neither of these two cooperating teachers is participating in a cooperating teacher discussion group. It is possible that their lack of participation in the group sessions is due, in part, to scheduling conflicts. Other staff members who were not part of the research group have joined the group discussions on a sporadic basis and have expressed to the researcher, their interest in learning from the results of this study.

MY PERSONAL LEARNING EXPERIENCE

"It was the best of times, it was the worst of times" (Dickens, 1859, p.13)

I am quite certain that on every occasion I have had to quote Dickens, none has been more appropriate. The September 1996-June 1997 school year was definitely my winter of discontent. Two of the cooperating teachers who were part of the research group left the school on stress leave and three student teachers withdrew from the student teaching program during data collection. In January 1997, I broke my wrist and fractured my elbow, my grandfather, with whom I was very close, passed away in March, and friends and relatives of two of the remaining five student teachers also passed away. In between personal tragedies, blizzards that forced winter storm school closures for the first time in twenty-five years, and the 'flood of the century' which took bus loads of senior high students into the most threatened flood zones to sandbag for days at a time also disrupted the school year. Add to this scenario the school's spring musical which consumes approximately 150 students and 50 staff members for two weeks and a normally hectic school schedule, conditions were ripe for tensions to run high. The storms and the flood affected

everyone who was here to witness them and affected some more than others.

Several of the cooperating teachers who were a part of the study were severely affected and understandably had to take care of their families. One of the student teachers could not contribute any time outside of the prescribed school day because of her need to support her family during the flood. As did many schools in the southern part of the city, we prepared to accept students from the flood-ravaged areas of the province for the balance of the school year. With all of this stress, teachers still had to honor their commitments to the school play, to their 'normal' teaching duties, to the committees they usually chaired or in which they participated, and some of us also had made a commitment to write a proposal for a provincial grant to fund a new Technology Resource Center in the school, a quest which began before any of these other events, but which was now due. Add one more stressor, that of a suddenly and severely ill father, and I found myself wondering why I was not one of those two teachers going on stress leave this year. If these were the conditions of my little world, what must theirs have been like? How does that old saying go? That which does not kill me, makes me stronger? At this point, the only things missing were famine and locusts.

I have not recounted these events to elicit sympathy - if you were in Manitoba during this time period, you suffered the woes of the weather as we all did. I am recounting the external events which affected the research project to set my learning experiences in their appropriate context. Just as the nature of learning to teach is a situated experience and cannot be fully described from outside of the culture in

which it is learned, so was this research. And just as this project was a study of how effective the cognitive apprenticeship framework would be to analyze the supervision of student teachers, now upon reflection of the entire process, I see my personal experience throughout the project as being one of testing the cognitive apprenticeship framework and its application to my learning experience within the project.

Whether by design or default on the part of my advisor, my experience has been to learn how to conduct qualitative research through the cognitive apprenticeship model. The project began with fairly intense involvement on the part of my advisor. Her mentorship guided me through the beginning phases of learning the necessary content about the framework and applicable or complementary research to support my investigation. While reviewing the literature, she taught me the necessary heuristic and control strategies for applying the literature in my specific context. Her invocation of a variety of learning strategies provided me with methods for using and learning the principles of qualitative research while allowing me to use and apply my own experiences as a classroom teacher to define the parameters of the useful literature. While guiding me through the complex nature of learning to conduct the research and gathering information to support the cognitive apprenticeship framework and its possible application to the supervision of student teachers, and eventually the investigation into the conferencing experiences of the cooperating teacher-student teacher pairs, the methods used were identical to the methods of the cognitive apprenticeship framework. For example, modeling was

demonstrated in her guidance of words to use when initially approaching potential participants for the research. Coaching was demonstrated non-stop and was critical in buoying my motivation levels during the less than ideal conditions I faced throughout the year data collection took place. Scaffolding was used in instances where I was unable to perform certain tasks alone, such as assisting me in formulating the questions for the first focus group sessions, to not only model how certain words and phrasing would elicit the kind of information I was seeking, but how the words could help develop trust and comfort between the participants and me rather than causing distrust to develop. The shape of the scaffolding changed much like it did in the conferencing experiences I was investigating - if I was able to perform tasks more independently, the 'supervision' was minimal as I was encouraged to articulate and reflect on the facets of the topic I was investigating and to explore its possibilities. As I came upon tasks or events where I was in unfamiliar territory, I asked for help or clarification and was given the support I needed. Before the data collection actually began, a number of research direction and execution learning opportunities were arranged so that I might experience the sequence of events in terms of type, complexity and diversity to help build that all-important conceptual map of the process so that, when I was immersed in it, the local or specific skills required to carry out the unexpected tasks could be learned more easily. During the data collection period in this particular case, I was thankful to have a clear overall picture of the research task since there were so many unscheduled interruptions and extraneous issues with which to deal. The sociological context of the act of conducting research was provided through a variety

of experiences such as facilitating a workshop in the Faculty of Education with a like-minded professor. The workshop style professional development seminar topic was connected to my research and took place before the project's data collection began. Participation in this event was useful for the research project because it provided me with some insights into a small portion of the sociological connections to the context where some of the questions within the research began, namely the Faculty of Education. In conjunction with the university's sociological context, the school environment sets up its own culture of practice which had to be explicitly articulated so that I could address the bias concerns I had at the outset of the development of the methodology. This awareness of the school contexts was also essential to designing the methodology to accommodate the participants in their culture of the practice and to capture the conferencing experiences as accurately as possible.

What had the greatest effect on my learning process? The conversation and narratives between an expert and a novice in and about the culture of the expert's research practice did, just as the cognitive apprenticeship framework suggested they would. It would have been interesting to have audio-taped the conferences with my advisor over the year to see if my perspective of this experience is as accurate as I think it is. Oddly enough, the two sociological categories missing from my experience within the cognitive apprenticeship framework happened to be in the categories of exploiting cooperation and exploiting competition too, although I do recall some conversations over the year where my performance skills and

experiences were compared to other graduate students' , just not as a matter of planned group learning activities. I also took advantage of the research experiences of the woman who performed the recorder function during the focus group sessions to compare some of the process skills I was learning and to see if some of the decisions I was making along the way made sense to another 'expert' (researcher and teacher) in the culture of the practice where the research was being carried out. As I sit here and reflect on the experience, I wonder if I had a critical self-realization point during the conferences as did the student teachers with their cooperating teachers? I wonder if my advisor planned to conference with me in a focused manner (it appeared as if she had given the meetings a lot of thought) as did the cooperating teachers with their student teachers? Did our respective reflection on our roles and tasks during this experience have the same effect on our abilities as the reflection did for the participants during the examination of the conferencing experiences of the cooperating teacher-student teacher pairs? Or is it because I have been immersed in the cognitive apprenticeship framework for so long that I am fitting the experience to the framework? Other elements, similar to those observed between the cooperating teacher and student teacher pairs during their conferences, existed during our meetings: conversations typically began with a synopsis of the positive aspects of my performance followed by those items which still required improvement. Humour was used as a tool to set the criticisms in their context, and, as time passed, I did more of the talking than my advisor did. We also grew to share in and enjoy a 'collegial' relationship. I wonder if anyone has ever tried to use the cognitive apprenticeship framework as an evaluative tool to study the efficacy of

graduate studies and specifically the roles and relationships between the faculty advisor and the student? My experience throughout this project paralleled what I was studying in many ways - not just in the perceived supervision process, but in allowing for all of the unknowns during the process to enrich the process because they were part of the situated cultures in which the process took place.

What have I learned through all of this? The pragmatic skills are easy to recount. I learned to perform the tasks required to carry out qualitative research. I learned to write at an increased academic level. I believe my perspective of parts of the educational process have expanded to include many different points of view, and that those points of view have influenced my thinking on the process of learning to teach. I have, by necessity, learned some time management skills which will not soon be forgotten. But what I appreciate most is the illustrated self-growth which is demonstrated in the way in which I made decisions about and for the research which took into account the needs of myself, my family and my friends and colleagues. These relationships are still strong, and some of them have gained strength through all of the turmoil. Evidence of my personal growth and my perspective expansion was illustrated in the reflexive journal I kept throughout the research process. It was difficult to discipline myself to sit down and record my thoughts and the events and reasons that led to the decisions I made at first, but I am glad that I did it; the journal proved to be a valuable vehicle in my learning experiences.

The journal also served an important pragmatic function throughout the research project, particularly during the data collection process since there were so many unscheduled and unaccounted for changes to the school schedule. It was valuable to keep track of the changes, choices, and the events which led to the decisions along the way. It was my source for finding a decision-making path which would not create any more compromises than necessary through the processes of conducting the research while, at the same time, maintaining my professional and personal integrity. But, like the journaling I expected the student teachers to do in their portfolio assignments as part of the Senior Years Program expectations, it was the section in my journal which served as a personal diary that helped me keep my sanity and allowed me to recognize that which was important to me in life. To have reviewed that part of the journal to recognize that my guiding principles, which are the foundations of my belief structure, were still intact was very comforting.

My grandfather held various ideals as his guiding principles, and our connection for thirty-two years had made many of those principles my own. He always demonstrated how fulfilling it was to do something well enough to meet or exceed his own expectations, whether the task was small and seemingly insignificant, or large and all-encompassing. He never took himself too seriously and could always learn something from others. He enjoyed every part of his life and never took anyone for granted. I write about him here because it was always his unwavering faith in me and the decisions I made throughout my adult life from which I have drawn strength many times throughout this experience. Most of all, I learned to

believe in myself, just like he always did. I dedicate this project to him because his belief in the quest for higher knowledge, to benefit those whose experience would come after the quest had begun, would be a wiser one.

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APPENDIX A

Mr. Gary Grubert, Principal
Grant Park High School
450 Nathaniel St.
Winnipeg, MB
R3M 3E3

Re: Our conversation about the proposed research project

Dear Gary,

This study, *A Qualitative Examination of Conferencing Between Student Teachers in a Secondary Setting*, focuses on the learning place in the interactions between cooperating teachers and student

Specifically, this research is designed to capture actual aspects of classroom activities from the perspectives of both the student teacher and teacher.

I would like to present an outline of the research and the methods of administration and staff at a staff meeting before the end of this year. This presentation is to elicit support for this project and to establish a pool of the teaching staff. Due to the nature of the study, a small sample of teachers from the pool of volunteers and invited to participate. Student teachers will be informed of the project's methods and intentions at their spring conference and invited to participate at that time.

Participant contributions will remain anonymous and any reference to a participant will be removed from the data. Participants will be able to review data files at any time during the study. Data on file will not be shared until the second student teaching block is complete and final evaluation. Participants will have the opportunity to withdraw at anytime should they be unable to meet their commitment to the project.

Please let me know when we can meet to discuss a date and time with the staff.

Sincerely,

Corinne MacMillan

APPENDIX B

PARTICIPANT CONSENT LETTER

Dear Participant,

My name is Corinne MacMillan and I am a graduate student in a Master's of Education program at the University of Manitoba. I will be conducting a research study as part of the thesis requirements for my degree.

The University of Manitoba requires that any research project involving human subjects must receive the informed consent of participants. This requirement has been put in place to assure the respect and confidentiality of the individuals involved. To fulfill this requirement, you are asked to read the study description and conditions carefully and, if willing, give your written consent to participate in this study. This research will be supervised by Dr. K. Lynn Taylor who can be contacted at 474 7456 or via e-mail : taylorl@cc.umanitoba.ca

The study, *A Qualitative Examination of Conferencing Between Cooperating Teachers and Student Teachers in a Secondary Setting*, focuses on the learning and teaching that takes place in the interactions between cooperating teachers and student teachers.

Specifically, this research is designed to capture actual aspects of the conferencing on classroom activities from the perspectives of both the student and cooperating teachers. Data will be collected from selected cooperating and student teacher pairs by providing the pairs with an audio tape recorder. Pairs are asked to submit one recorded conference per week during each week of the two five week student teaching blocks. If either participant of the pair feels that the conference is becoming too personal or non-productive, then either participant may turn the recorder off and record a conference later that same week. It is also requested that the cooperating teacher and student teacher individually provide the investigator with informal written reflections on the taped conference. Reflections ideally would be completed immediately following the conference. These reflections are intended to be open-ended, but may include the most salient elements of the conference (for example, perceived value of the feedback, personal responses to giving and receiving feedback). It is estimated that in addition to normal conferencing time, the weekly written reflections would require approximately 1 ½ hours over the course of each 5 week block. These data collection methods were selected so that the investigator would be as unobtrusive as possible during data collection.

In addition to the two primary sources of data (audio tapes and the written reflections of the student and cooperating teachers), three group sessions, lasting approximately one hour each, will be held to share ideas surrounding the student teaching and cooperating teaching experiences. A group of approximately eight cooperating teachers and a group of approximately eight student teachers will meet independent of each other to discuss their conferencing experiences with the investigator. These sessions will take place near the end of September 1996, near the end of the first student teaching block (December 1996), and again near the end of the second student teaching block (April 1997). The purpose of these seminar-like sessions is to identify issues and factors that are perceived as influencing a cooperating or student teacher's experience.

Participation in this research is wholly voluntary. All parties are free to decline, or to withdraw at any point in the research, without fear of repercussion. If withdrawal is requested, any data generated would be destroyed. All data contributed will remain anonymous and all references that might identify a participant will be removed from the data. Data contributed by participants will not be shared with all participants in the study until the student teaching blocks are completed. When the analysis of the data is complete, audio recordings and personal reflection submissions will be destroyed to preserve anonymity. In the presentation of the research results, participants will be identified only by their level of experience (cooperating or student teacher), the discipline area in which they teach, and gender. Data are typically not used directly, but summarized by theme for presentation. Direct quotes will take the form of short (1-4 sentences) anonymous excerpts chosen to illustrate specific findings.

Participants will have access to their personal data file and interpretations based on that data at any point in the study. Once analysis is complete, a summary of the findings will be sent to each participant at his/her permanent mailing address.

Please sign and date this letter below to indicate that you consent to participate in this research under the conditions described above and return it to the investigator. Photocopies of this signed letter will be provided to volunteers upon request. If further information is required, please contact the investigator at the number listed below or the research supervisor (her number and e-mail address are on page 1).

Corinne MacMillan
452 3112

(Signature of Researcher)

(Date)

(Name of Participant - please print)

(Signature of Participant)

(Date)

Please indicate below if you wish to have a copy of this letter for your records.

_____ Yes

_____ No

APPENDIX C

Verbal Instructions Given to Participants Regarding Audio-Taping of Conferences

Pairs are asked to submit one recorded conference per week during each week of the two five week student teaching blocks. If either participant of the pair feels that the conference is becoming too personal or non-productive, then either participant may turn the recorder off and record a conference later that same week. If one of the pair is unable to participate in recording a conference in any particular week, it is permissible to record two conferences the following week to make up for the missed recording. Two reflective submissions would also need to be made in a case such as this - one after each recording.

APPENDIX D

Verbal Instructions Given to Participants Regarding Reflective Notes on Audio-Taped Conferences

The cooperating teacher and student teacher are requested to individually provide the investigator with informal written reflections on the taped conference.

Reflections ideally would be completed immediately following the conference.

These reflections are intended to be open-ended, but may include the most salient elements of the conference (for example, perceived value of the feedback, personal responses to giving and receiving feedback). The reflective statements need not be typed, so long as they are legible. Please write your name, the date you wrote the reflective statement and the date the conference took place on the submission.

APPENDIX E

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THE CODING GRID

<u>GLOBAL CATEGORY</u>	<u>SPECIFIC CATEGORIES</u>	<u>CODE</u>
1. Content -the explicit conceptual, factual, procedural and strategic knowledge which underlies an expert's ability to make use of concepts, facts and procedures necessary to carry out tasks in their own or another field.	<p>a) Domain Knowledge-includes the conceptual and factual knowledge and procedures explicitly identified within a particular subject.</p> <p>eg) "...look inside and look at the layers and I've made them cut open the trachea so that they can actually see them..." (3/2;4;2;6008-6009).</p>	C:DK
	<p>b) Heuristic Strategies-generally effective techniques and approaches for accomplishing tasks-they tend to be acquired tacitly through immersion in the community.</p> <p>eg) "That's when they're causing trouble. When you begin a class, you should give your instruction within 30 seconds of coming into the room." (7/7;1;1;108-110)</p>	C:HS
	<p>c) Control Strategies-the level and type of control over the process of carrying out a task - a management system for conceptual and factual knowledge and their application in future situations.</p> <p>eg) "The one thing I would suggest you really need to do some work with is - I shouldn't say organization, but the impression of organization. You quite often look like you don't know what you're doing next. And that could be that you don't know what you're doing next or it could be that you're just not giving the impression. The more you can present to the students that you are organized, the more credibility you will have with them." (2/3;1;1;757-764)</p>	C:CS

d) Learning Strategies-knowledge about how to learn - ranges from general strategies for exploration to local strategies for extending or reconfiguring knowledge for transfer to a new situation. C:LS

eg) "...and you must be doing that with students at that level, otherwise you're going to get that kind of superficial responses from them." (2/3;3;1;2538-2540)

2. Method -the ways in which the cooperating teacher might demonstrate or elicit the tacit skills and knowledge that guide expert practice.

a) Modeling-carrying out a task for observation and/or to provide a conceptual model of the processes required to accomplish the task. M:M

eg) "Yup, I would just say, 'Sorry, you missed your lab marks and that's it. It's going to be reflected in your unit mark and maybe next time you do a lab you might show up' " (3/2;3;1;1683-1686).

b) Coaching-offering hints, suggestions, feedback and may direct attention to a previously overlooked aspect of a task. This is a highly interactive and situative portion of the supervisory task. M:C

eg) "You'll want to emphasize that as you go along" (9/2;1;2;4489)

c) Scaffolding-the cooperating teacher provides supports to the student teacher. Scaffolding may take the form of verbal or physical supports and includes cooperative ventures between the student teacher and cooperating teacher in which the express intention is for the student teacher to assume as much of the task as possible. M:S

eg) "...maybe we can do it together even if I sort of run it, we can work together on it." (2/3;3;1;2752-2753)

d) Articulation- includes any method of getting the student teacher to articulate his/her knowledge, reasoning or problem solving processes in a domain. M:A

eg) "...first is ask you to give your impressions of how the lesson went and especially emphasize the positive points."
(8/6;3;1;2098-2100)

e) Reflection-any process of comparing the student teacher's thinking processes with that of an experts. Reflection can be enhanced by keeping a daily journal or video taping lessons for critique. Interaction with others is a critical stimulus for reflection to take place. M:R

eg) "So you're thinking about what to put on [the unit test] and also how to ask?"
(9/2;2;2;2956-4957)

f) Exploration-the student teacher moves to a level where he/she performs teaching tasks independently. This is where supports from the cooperating teacher fully fade and the student teacher is required to test his/her skills without assistance. M:E

eg) "So what do you think you'll do? What are some different objectives you want to..."
(9/2;3;2;5006-5007)

3. Sequencing-the planning of a series of learning experiences in response to the changing learning needs of student teachers at different stages of skill acquisition.

a) Increasing Complexity-construction of tasks and task environments where more and more skills and concepts are included in achieving a teaching task. Increasing complexity may involve the use of scaffolding. Se:IC

eg) "...maybe we can do it together, even if I sort of run it, we can work together on it."
(2/3;3;1;2752-2753)

b) Increasing Diversity-construction of tasks in which the student teacher performs teaching tasks in a wider variety of situations. Se:ID

eg) "...depending on how much time I have I could start going into the next part which is Big Change Big Web or maybe I should start talking about the decomposition part, you know, the composting and applications and that?" (9/2;1;2;4380-4384)

c) Global Before Local Skills-a strategy for sequencing lessons so that the student teachers have a chance to apply a set of skills in the context of an interesting and authentic problem solution before they are required to generate or remember the constituent skills. Se:GBLS

eg) "...the planning comes to mind. I know that sometimes...at the beginning I was writing out everything all the time and as I got close to the end, I wasn't doing that as much...and sometimes I tended to get a little lost myself,..." (8/6;4;1;3053-3058)

4. Sociology- of the learning environment. Student teachers learn skills in the context of their application to realistic problems and within a culture focused on and defined by expert practice.

a) Situated Learning-Student teachers carry out authentic tasks in an actual practice setting, reflecting the multiple uses to which their knowledge will be put in the future. So:SL

eg) "...but I try to do as much visual [teaching] as possible but I thought that was visual enough and now I realize you need more." (3/2;1;1;446-448)

b) Culture of Expert Practice-Student teachers actively communicate about and engage in the skills involved in the practice of carrying out tasks in the domain. So:CEP

eg) "...I was resolved to come back the next day,

be lighthearted, and have fun and not try and control everything so much and have everything under my finger and it worked! I trusted them and they trusted me right back!" (4/9;2;2;3809-3813)

c) Intrinsic Motivation-Student teachers perform tasks because the tasks are intrinsically related to a specific goal or interest. So:IM

eg) "I get the impression that they felt they could get away with stuff they couldn't get away with, with you, so I thought 'That's it! End of story!'" (2/3;1;1;686-688)

d) Exploiting Cooperation-Student teachers work together with other student teachers and/or cooperating teachers in group activities to foster cooperative learning or task completion. So:ECoo

No example was found in the data.

e) Exploiting Competition-A strategy of providing student teachers with the same task to carry out and then comparing the different processes used to achieve the task. So:ECom

No example was found in the data.

5. Emergent/Student Teacher-
These emergent categories apply only to student teacher narratives in the data files.

a) Clarification-The student teacher asks the cooperating teacher for confirmation of the directions he/she offered. ST: CI

eg) "So are you saying..." (9/2;1;2;4623)

b) Self-Evaluation-The student teacher compares his/her acquired skills to those he/she still needs to achieve. ST:SE

eg) "...there's just sometimes when I think, when I'm asking questions that they

aren't really responding - I think that might be because I'm asking too many redundant questions..."(8/6;1;2;6187-6190)

c) Articulation-The student teacher provides a ST:A synopsis of classroom activities or simply makes a statement that provides information relative to what was occurring during the point of interest.

eg) "...I tried to keep the lesson going and get the kids to work instead of putting something on the board. I had them do the work instead of answering the question myself."
(8/6;4;1;3014-3017)

d) Reflection-The student teacher compares ST:R his/her thought processes for carrying out a task to that of an expert's.

eg) "...I think the progression was there as well the same sort of thing, as you mentioned many times, it's just a matter of keeping them busy..."
(7/7;4;1;2851-2854)

e) Exploration-The student teacher initiated ST:E a new task or teaching strategy without prompting from the cooperating teacher.

eg) "I was thinking of doing, have you ever done a lung dissection?" (3/2;1;2;5545-5546)

6. Emergent/Cooperating Teacher
These categories applied only to cooperating teacher narratives in the data files.

a) Goals-The cooperating teacher initiated CT:G a discussion of either the roles of him/herself within the relationship of a cooperating teacher/student teacher experience or skills and behaviours he/she would like to see his/her student teacher focus on for further development. This could include modeling the desired behaviours.

eg) "That's one of the major things I want you to work at this second time around."

(8/6;1;2;6211-6212)

- b) Humour-The cooperating teacher said or did something to create levity during a conference. CT:H

eg) "...sometimes you will start talking to the group and it's clear that you don't have everyone's attention. In fact, the radio might even still be playing (chuckling). So, turn off the radio, close the door and make sure you've got everyone's attention before you give the introduction (still chuckling)." (8/6;2;1;1406-1411)

- c) Tone and Focus-The cooperating teacher made a statement at or near the beginning of the conference to set the objectives for the conference. CT:T/F

eg) "...first we're going to talk about the unit test tomorrow and then generally review the last five weeks." (9/2;4;2;5287-5289)

- d) Discovery-The cooperating teacher learned something about the students in his/her classes or him/herself that they likely would not have learned had it not been for the presence of the student teacher. CT:D

eg) "Uhh, so I would nudge [student A], and 'oh' and he would think back and he had a fantastic memory...I couldn't believe it!" (7/7;1;1;177-179)

APPENDIX F

FOCUS GROUP #1

Questions for Cooperating Teachers (predetermined):

1. What are your goals as a cooperating teacher?
2. What do you believe the goals of the teacher education program to be?
3. What do you perceive the goals of the student teachers to be...
 - a) In the school?
 - b) In your department?
 - c) In the classroom?
4. How do you see yourself achieving those goals?

Questions for Student Teachers(predetermined):

1. What are your goals as a student teacher?
2. What do you believe the goals of the teacher education program to be?
3. What do you perceive the goals of the cooperating teacher to be in?
 - a) The school?
 - b) Their department?
 - c) The classroom?
4. How do you see yourself achieving those goals?

FOCUS GROUP #2

Student Teachers Questions (predetermined):

1. Please share some of your experiences with us from the past five weeks, which stand out the most in your minds. You likely had both moments of joy and frustration. Tell us one positive episode and one negative episode and what you feel you learned from each.
2. Of those moments of joy and/or frustration, did your cooperating teacher provide strategies to help you to be successful? What were they?
3. Given your experiences in your student teaching block, were there supports that your programming at the university could have provided to prepare you to teach more successfully?
4. What additional supports could be put in place at the school during your second block to make your experience more effective?

Cooperating Teachers Questions (predetermined):

1. Please share some of your experiences with us from the past five weeks, which stand out the most in your minds. You likely had both moments of joy and

frustration. Tell us one positive episode and one negative episode and what you feel you learned from each.

2. Of those moments of joy and/or frustration, what strategies did you use to help your student teacher to be successful?
3. Given your experiences in the student teaching block, were there supports that the programming at the university could have provided to prepare your student teacher to teach more successfully?
4. What additional supports could be put in place at the school during the second block to make the experience more effective?

FOCUS GROUP #3

Student Teachers Questions (predetermined):

1. If you could put together a "kit" of beginning teacher knowledge and bury it like a time capsule, what five things would you include?
2. How do these five things you've just named compare with your goals from Sept. '96?
3. What is the one thing that surprised you the most about the reality of being a teacher?
4. What did this year's experience teach you to help you deal with that issue successfully?

Cooperating Teachers Questions (predetermined):

1. If a first time cooperating teacher asked you for your advice on what they should do to be an effective cooperating teacher, what would you say are the most important strategies or practices?
2. How do these strategies/practices compare to your goals from Sept. '96?
3. How did you feel about the conferencing experience?

APPENDIX G

An Example of a Coded Data File Transcript

1662

1663

CONFERENCE #3

1664

CT3/ST2

1665

1666 CT:and you decide ahead of time what you're going to
 1667 do about the lab, I mean, your choices are, you know,
 1668 you have to spend your time having them come in and
 1669 do it...

—
M:C

1670 ST: Then I have to get David though, cuz these enzymes
 1671 aren't....

—
artic

1672 CT: exactly.....

1673 ST:going to be good until tomorrow.

—
artic

1674 CT: They're not going to be good anymore or just say,
 1675 'unless you had a really specific good reason not to be
 1676 here for this lab, sorry you're out of luck, you lose
 1677 your lab marks.' I mean that's part of the, the crunch
 1678 when they keep skipping classes. Like, those two guys
 1679 skipped. No doubt about it. So you have to decide
 1680 whether you want to take your time to catch them up
 1681 because they skipped? You know?

C:DK
:HS—
M:A

1682 ST: Nope. If they don't have a really good reason.

—
SO:IM

1683 CT: Yup, I would just say, 'Sorry, you missed your lab
 1684 marks and that's it. It's going to be reflected in your

—
M:M
C:HS

1685 unit mark and maybe next time you do a lab your might

1686 show up.'

1687 ST: Even if you go out of your way and you have it at

1688 lunch or after school, those people won't show up.

1689 CT: They don't show up! You learned that today did you!

1690 (chuckling, speaking to Karen) (big laughter from

1691 group)

1692 ST:and you can tell them five times, 'Look, this is

1693 going to be on the exam' and ugh, they just don't, ugh

1694 (major frustration). Should I stop it? (referring to

1695 recorder)

1696 CT: Oh, sure, we're finished.

1697

1698 Running time: 1 minutes, 23 seconds.

1699

—
So: SL
—
C:HS
—
So: SL
—

APPENDIX H

An Example of a Reflective Statement

This particular reflective statement is from cooperating teacher 3. It coincides with the example of the coded conference transcript in Appendix G.

Reflections

Tape 3 Dec 13.

- done before class
- suggestion as to what to do with remainder of time
- general discussion of the experience of student teaching
- we talked another 20 min. after tape turned off - she was surprised when I said she had given in her abilities + we discussed the changes I'd observed over the 5 weeks

APPENDIX I

**FOCUS GROUP #1 SUMMARY
COOPERATING TEACHERS**

Date: Tuesday, October 8, 1996

Time: 3:45 PM - 4:45 PM

Location: Room 1

Questions for Cooperating Teachers (predetermined):

1. What are your goals as a cooperating teacher?
2. What do you believe the goals of the teacher education program to be?
3. What do you perceive the goals of the student teachers to be...
 - a) In the school?
 - b) In your department?
 - c) In the classroom?
4. How do you see yourself achieving those goals?

Number of teachers who responded to volunteer request in session #1 = 9

Number of teachers who actually attended = 6

Reasons given for absence - 1 had the flu, 1 was having surgery, 1 had a personal matter to tend to.

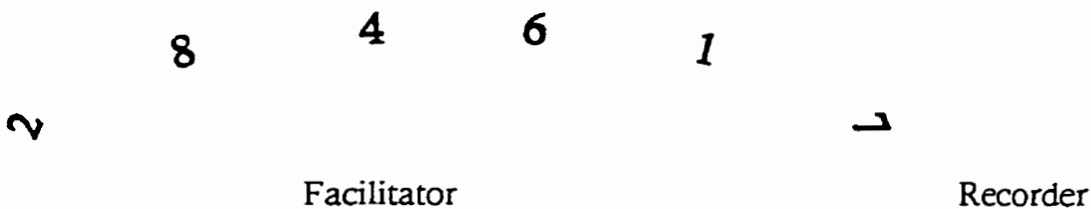
Participant Sample:

2 teachers each from middle school, middle and high school, and high school - each pair comprised of 1 female and 1 male.

2 of the 6 teachers were option course teachers (1 male and 1 female)

2 of the 6 teachers were department heads (1 male and 1 female)

Seating Arrangement:



Teachers were seated at tables, which were arranged in a semi-circle

Facilitator: was seated in front of the teachers, approximately 4 meters away from the teacher directly in front of her.

Recorder: was seated behind and to the right of the facilitator so she was almost out of view of the teachers.

Recorder Observations:

the recorder was asked to give her impressions to the following before the session began:

General mood of the group? - good/ relaxed/ prepared

Does anyone appear agitated as they walk in? - # 7 a bit - just received some information regarding the due date of mid-term mark recorders - much sooner than initially expected

general comments - Facilitator explained the rationale/background why they were selected - a bit of praise given to all - encouraged to attend future sessions

Facilitator relaxed - help to set the mood - people laughing - #5 good afternoon - she was on time (surprised!)

Food and drink were well received and appreciated by the group.

Summary of discussion:

1. What are your goals as a cooperating teacher?

All six teachers agreed with each other here, but after nodding or stating their agreement with each other they had their own emphases (examples follow). They also tended to state their goals in terms of classroom objectives.

- two spoke initially of creating an overview of classroom procedures, norms
- how to deliver a good lesson
- create independence (for the student teacher) as soon as possible so he/she feels comfortable starting a class
- departmental goal - to provide a variety of experiences across subjects/levels
- delivery of a lesson—————}”tricks of the trade”
- classroom management strategies————}”tricks of the trade”
- three people very concerned about transmitting the practical “how to” of teaching - “the act of teaching”
- role modeling - to give the student the opportunity to adapt their own style and “see what fits”
- “human check” - “let the student teacher see you make mistakes and fix them”

One teacher contributed this after agreeing with the others that their goals are the same as his; but his current experience was something other than what he was accustomed to:

”I see myself as more of a facilitator to implement their [student teacher’s] goals ...often I feel like I’m pushing a rope. I feel like I’m wasting my time. I’m too busy

with my own students. I don't like observation for the first three months. Go do something! Don't sit there like a bump-on-a-log reading your text - you're wasting your time and mine!"

He did not seem to feel it was his responsibility to invite participation or create/offer opportunity for it - expected the student teacher to take the initiative.

I found myself asking for clarification from him at regular intervals - "so what you're saying is that..."

The last comment in this section came at the end of the "human check" example. I asked how this fit into the goals of a cooperating teacher and the teacher who raised this issue suggested that it really did not - there was not enough time. This statement led us directly to the next question.

2. What do you believe the goals of the teacher education program to be?

General Comments:

The theme here was that the cooperating teachers were not really sure. They really did not know how to answer this question. One offered the idea that a goal of the program would be to "help [student teachers] function as independent teachers" but beyond this they did not know. This suggests the need for greater communication between the faculty and the schools.

I had to backtrack here and define the salient features of the program after a couple of cooperating teachers asked clarification questions. I highlighted the portfolios (both interim and final versions), the regular noon hour seminars, evening seminars and the self-study work.

This definition seemed to help them understand the program somewhat. But they still had difficulty coming up with any kind of definitive list. Four of the six agreed with a comment that the faculty appeared to be heading in a better direction with this program than the general program of the past in terms of having the students spend more time in the schools and therefore gaining more practical experience.

One of the cooperating teachers offered that a goal should be to give the student teachers the necessary skills to get a job.

Generally, the discussion deteriorated here to questioning the university's bias towards theoretical coursework v. application/practical knowledge. All six were in agreement. Someone finally made a comment about the "reality of the job" and that led to question #3.

3. What do you perceive the student teacher's goals to be in...

General Comments:

There was a very clear sense of direction in the first two parts of this question about “what the student teachers needed to know and how they [the cooperating teachers] were going to get them [the student teachers] there”. An interesting comment was made by one of the teachers later in this discussion about the distrust of theory v. practice.

a) In the school?

all in agreement here except one

- whole school knowledge re: culture, climate, structure of teams/departments and the interconnection/dependency of the staff, role of the administration and support staff, how the handicapped students fit in, teen moms, and the other variety of programs all manage to ‘work’ together to provide the school with its role in the community.

- get involved with extracurricular activities re: sports, clubs, concerts, recitals, musicals, start their [student teachers] own club or activity

- investigate the roles of middle school and high school in the same building re: connections, harmonies, discords, programming

- participate in staff meetings, paper work, get a sense of the legal issues in regards to teaching

Negative case: these should be their goals but... - the teacher described a student teacher without goals. Only goal of the student teacher is to get a credit and a job. “They don’t have a goal to get involved with the whole school”

b) In your department?

all in agreement with each other’s statements

- to learn ‘what you do with a novel. Novels that need to be taught in English don’t come with instructions”

- to get the benefit of several points of view on actually teaching

These aforementioned comments led one of the teachers to suggest that the student teachers come from the university with a distrust of what they learned - re: is it applicable to the classroom?

- in science - what do you teach and how, how do you set up a lab, how do you keep kids interested?

c) In the classroom?

all in agreement with each other

- execution of lessons - with all of the classroom dynamics - not like microteaching - must account for class composition
- making mistakes and fixing them
- feeling the mood of the room and knowing how to proceed
- evaluating lessons and making them better
- gain "sense of maturity" - teacher questioned the child/adult role of a student teacher - this is where the student teacher has to make the transition to decision-maker
- cooperating teacher role - nurturing, provoking the development of self-esteem - comment here that university is not meeting this need.

Negative case: idea of goals being set by the student teacher for the students in the classroom is too "nebulous". "They can't set goals for themselves! We need to be more practical" - again I found myself asking clarification questions and trying to steer his thinking on the subject towards assuming some responsibility for supporting the student teacher's development of goals and all I got was another golf analogy - "...But that's like a game of golf...if you hit the rough it doesn't matter...it's what you do after"

Question #4: How do you see yourself achieving those goals?

General Comments:

- many comments here but all in agreement
- focus for achieving all goals was to :
 - talk with the student teacher
 - model expectations for the student teacher
 - prompt to cue the student teacher into thinking about things
 - fading to create independence
 - teaching self-evaluation to create independent thinkers

Examples:

-student teachers don't plan far enough in advance - need to see the big picture - where students have been, are and going to be - re: need to discuss unit planning with the cooperating teacher

-evaluate every lesson - do you [the student teacher] know how to improve?

-timelines - evaluate the student's lesson on a timeline scale then discuss it with the student teacher - i.e. - what they think happened v. what you recorded

-student teachers are too concerned with teaching content - "it's O.K. to be concerned but I must help them see the whole class and the role of those dynamics and their effect on the content"

Question #5: The issue of distrust of the theory learned in the university was raised by _____. Your reference was to the disjuncture between theory and practice. Could you elaborate?

-agreement throughout group

“Theory taught in university or college and staged teaching situations fall short of reality in the classroom. They [student teachers] get here and they can’t do what they did there. I think they’re often underselling themselves”

-comment that advisor should spend more time in the school helping to make those (theory/practice) connections with the student teachers

-comment that one of our second year seminar University of Winnipeg students has yet to meet her advisor

-comment about the university teaching student teachers how to develop rapport with students

-comment to the defense of the faculty advisor from the U of M -very involved with the program - reality check pointed out that these advisers have responsibilities to tend to at the university too!

-We were getting off topic so I asked the group 'Do you see anything that may contribute to the distrust?'

-student teachers use a university Curriculum and Instruction assignment that was written for use in the school practicum - this series of lessons did not work - the cooperating teacher had to explain how it was necessary for the teacher to be flexible with lessons

-suggestion to do smaller, more frequent blocks of student teaching to try to use more of the theory in a practical setting.

I made a clarification comment about the realistic nature of more frequent episodes in the school re: timetabling and schedules at the university to see if anyone would recognize how difficult it would be but all felt that it was “doable”.

Question #6: In light of our discussion here, if you could provide the faculty with a suggestion to improve the programming, what would your suggestion be?

-all agreed with each other and then added their own examples

Examples:

-have student teachers spend a whole year in the school practice teaching in-schools every morning in first semester, all day in second semester

- need to teach student teacher/student rapport
- time required for student teacher to see growth of the students in their classrooms
- internship program

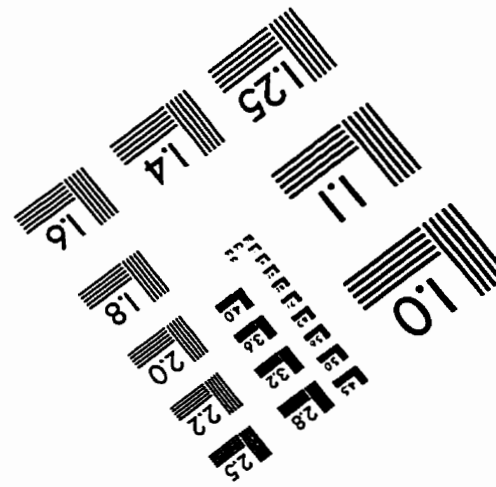
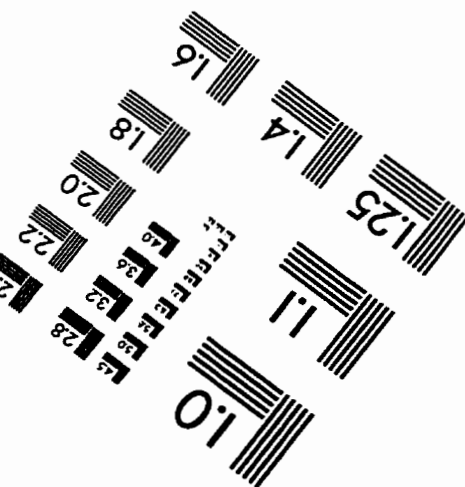
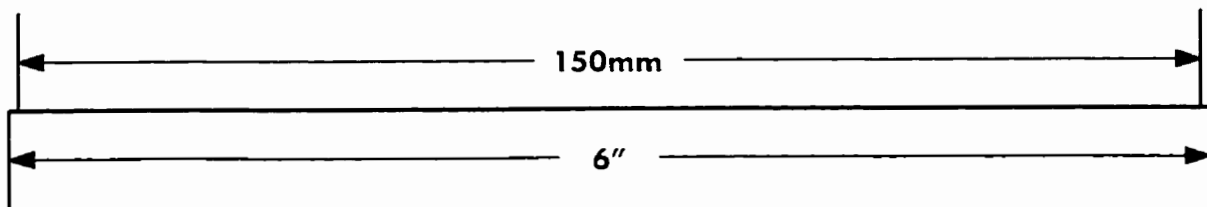
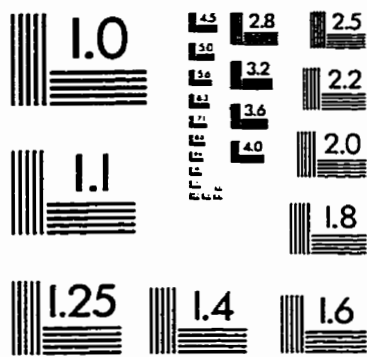
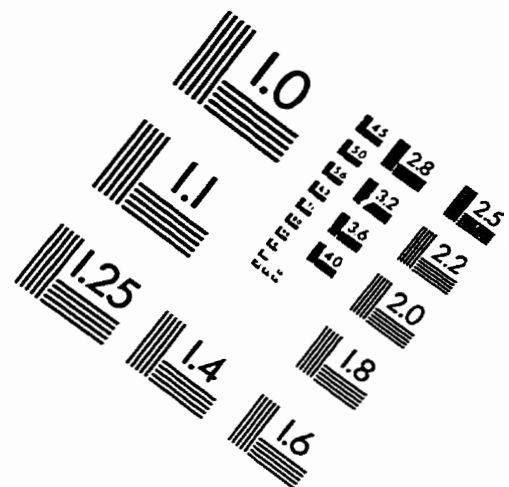
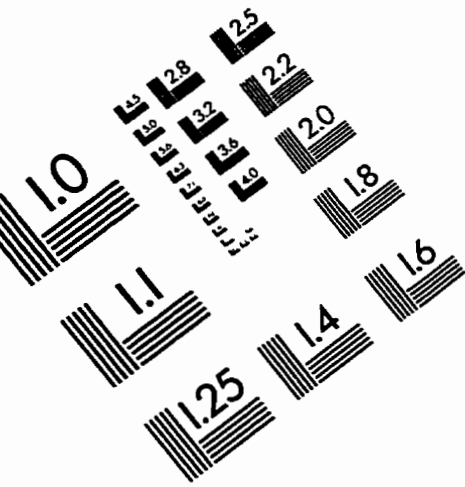
APPENDIX J

Definitions

1. **Co-practicum** - coursework or other academic events occurring in conjunction with the student teaching experience.
2. **Lead Teacher** - a practising teacher in a school which is host to the Senior Years Pilot Project. This teacher is responsible for organizing and facilitating the in-school practicum. He/she participates in the selection of student applicants to participate in the program at the host schools, serves on a Faculty of Education steering committee which reviews the program in the schools, contributes to the design, execution and evaluation of in-school coursework, and acts as mediator and mentor to the selected student teachers in the host school. The lead teacher also participates in and, in some cases, can facilitate in-school seminars, which form the basis of the off-campus, co-practicum coursework.
3. **Seminar and School Experience** - A series of school experience courses in which Education students are placed in the school environment in increasing amounts of time. In the first year of the Education program, a student spends less time in the school environment than he/she would in the third year of his/her Education program. The focus of this part of the coursework is to provide the student teacher with a variety of in-school experiences and when the student returns to the university setting, a forum is provided to encourage small group discussions about the students' experiences. The portion of particular note in this research study is the third level of this progressive course. The Seminar and School Experience III course "offers three options: continuation in an elementary or junior high school, a special education situation, or an experience in an educationally related institution. Philosophical and practical aspects of the school experience will be dealt with in seminars" (U of M General Calendar, '97-'98, p.174). The time spent in the schools at this third level is equivalent to approximately two-thirds of the time spent in a school if the student was participating in his/her final or certification year practicum.
4. **In-School Seminars** - A series of seminars, approximately one hour in length, designed to provide student teachers with "tricks of the trade" with regard to the teaching profession. The seminars are facilitated by experienced teachers in the school. Seminar topics typically include: classroom management, unit planning, lesson planning, teaching with technology, portfolio development, evaluation strategies, alternative assessment techniques, applying for a teaching positions, becoming a substitute teacher and surviving, and parent contact. These seminars are organized by and may also be facilitated by the lead teacher, who typically arranges the seminars to take place over the noon-hour on the observation days before the teaching block begins.
5. **Content Area** - Any particular general content area which may include a group of specific subjects, for example, Science.

6. **Subject Area** - Any particular subject taught in a provincial school in accordance with provincial curricula, for example, Senior 3 Biology.
7. **Course Levels** - Any particular subject taught in a provincial school in accordance with provincial curricula but in varying degrees to accommodate the range of academic needs of the students, for example Biology 30S, Biology 30G and Biology 30M.

IMAGE EVALUATION TEST TARGET (QA-3)



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